

U.S. Department of Energy

Environment, Safety, and Health



Tiger Team Assessment of the Pinellas Plant

May 1990

MASTER

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PREFACE

This Document contains findings identified during the Tiger Team Compliance Assessment of the Department of Energy's (DOE's) Pinellas Plant, Pinellas County, Florida. The assessment was directed by the Department's Office of Environment, Safety, and Health (ES&H) from January 15 to February 2, 1990.

The Pinellas Tiger Team Compliance Assessment is comprehensive in scope. It covers the Environment, Safety and Health, and Management areas and determines the plant's compliance with applicable Federal (including DOE), State, and local regulations and requirements.

The Pinellas Tiger Team Compliance Assessment is one component of a larger, comprehensive DOE Tiger Team Compliance Assessment program planned for more than 100 of the Department's operating facilities. This assessment is part of a ten-point initiative announced on June 27, 1989 by the Secretary of Energy, Admiral James D. Watkins, USN (Ret.), to conduct independent oversight compliance and management assessments of the ES&H programs at DOE facilities. The objective of the initiative is to provide the Secretary with information on the current ES&H compliance status of DOE facilities, root causes for noncompliance, adequacy of DOE and site contractor ES&H management programs, response actions to address the identified problem areas, and DOE-wide ES&H compliance trends and root causes.

April 1990
Washington, D.C.

TIGER TEAM COMPLIANCE ASSESSMENT REPORT

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EXECUTIVE SUMMARY

This report documents the results of the Tiger Team Assessment of the Pinellas Plant conducted from January 15 to February 2, 1990. The purpose of the assessment was to provide the Secretary of Energy with the status of Environment, Safety and Health (ES&H) Programs at the U.S. Department of Energy's (DOE's) Pinellas Plant. The plant, located in Pinellas County, Florida, is operated for the Department by General Electric Neutron Devices Department (GEND).

The Tiger Team Assessment was conducted by a team comprised of professionals from DOE, contractors and consultants.

The assessment did not identify any problems at the Pinellas Plant which present an undue risk to public health or the environment. The Tiger Team cited four Category II Concerns in the Safety and Health area that require immediate attention to formulate corrective action plans and to initiate the corrective measures. The Tiger Team also identified areas which will require additional attention to achieve full compliance with regulatory or DOE requirements.

The openness and forthrightness of the Albuquerque Operations Office (AL), the Pinellas Area Office (PAO), and GEND contributed substantially to the ability of the Tiger Team to complete the assessment effectively and in reasonable time. During initial briefings and throughout the assessment, the Tiger Team was provided an objective accounting of known ES&H problems and contributing factors at the site. Many of these problems and causes were validated during the course of the assessment.

The Pinellas Plant is a facility which can be characterized as a high technology electronics manufacturing operation. In its operations, the plant handles more than 5000 different chemicals and a few sources of radioactivity. Radioactive materials include triply encapsulated plutonium dioxide (Pu-238), gaseous and adsorbed tritium, and krypton-85. Compared to most other facilities in the DOE complex, the inventories of hazardous materials are low but still significant from the standpoint of worker safety and potential offsite effects in the plant's urban setting.

Over the last several years, management emphasis has led to increased productivity and quality while accomplishing a 10 percent reduction in total staff. To a major extent this improvement resulted from decentralizing responsibility and authority to local floor managers in charge of product lines and production operations. This culture change yielded its intended result and offers promise for an enhanced recognition by all employees of a sense of ownership of environment, safety and health concerns consistent with DOE's policies. The benefit of accelerating ES&H awareness that can be derived from this decentralization needs to be balanced to ensure that both uniformity and formality of operations exists site-wide at the Pinellas Plant.

Today there is a marked informality associated with many operations at the site. In some instances, documentation is absent or incomplete, procedures are outdated or unused, and lines of authority are not clear.

In January 1989, the importance of ES&H began to surface within GEND consistent with the Operational Surety Initiatives of the Albuquerque Operations Office (AL) begun in October 1988. The efforts by GEND, PAO and AL were accelerated by Admiral Watkins' ten-point initiative in July 1989. GEND assembled many of its key staff into a Technical Safety Assessment Team (TSAT) to examine and recommend improvements to its Safety and Health Program and to develop a plan of action. The decentralized management responsibility had the additional benefit of involving much of the work force in the process, thus achieving a significant degree of buy-in and acceptance of the final product. The GEND self-assessment is a progressive and encouraging first step to fully develop a comprehensive Safety and Health (S&H) Program at the Pinellas Plant. Actions are underway to correct specific shortcomings identified in the GEND self-assessment, particularly in the S&H areas.

The Tiger Team found that the Environment Program has not received the same level of attention at the Pinellas Plant as the S&H area. While some problems identified in the findings were recognized and corrective plans developed, a more comprehensive plan should be developed to fully characterize and remediate areas of soil and groundwater contamination and that efforts should be increased to ensure that permits exist for all air pollution sources.

The Safety and Health assessment reflected needs for preparing a site-wide safety assessment, strengthening the Occupational Safety Program, implementing an effective nonweapons QA program, more effective self audits and inspections by plant personnel, and establishing of uniform ES&H training for supervisors and workers.

The Management assessment identified a need to communicate more proactively and reinforce ES&H policy objectives throughout PAO and GEND, and to generate greater rigor in operational controls through more formal management systems.

GEND and PAO emphasize relations with the local community. In addition, the PAO has developed positive and effective working relationships with State and local officials, and the Federal Environmental Protection Agency. Although these are not regulatory compliance findings, they do represent favorable conditions related to environment, safety and health performance.

Environment

The environmental assessment identified 38 findings representing compliance issues and 22 findings concerning nonattainment of acceptable best management practices. None represent an undue risk to public health and the environment from continued operation of the Pinellas Plant. However, the assessment does indicate a lack of attention to environmental management for a facility with the size and type of operations of the Pinellas Plant. The key findings and causal factors are discussed below.

The Environment Subteam identified six key findings that represent potential compliance problems with regard to Federal and State regulations, or DOE Orders. These problems concern: 1) the addition of small quantities of radioactive waste to non-radioactive classified waste to solve a classified

waste disposal problem; 2) incomplete documentation of dose-assessments; 3) lack of adequate characterization of inactive waste sites; 4) deficiencies in the site-wide environmental monitoring program; 5) on- and offsite groundwater contamination which is above State standards; and 6) failure to apply for air pollution permits. A key National Environmental Policy Act (NEPA) finding concerned reliance by the site on an outdated site-wide Environmental Assessment which has no documented Finding of No Significant Impact (FONSI).

There are three causal factors that characterize the environmental assessment findings. First, Pinellas Plant management has not accorded the same level of importance to environmental requirements and issues as it has to the Safety and Health Program. Second, both PAO and GEND are understaffed and do not have sufficient experienced environmental talent. Third, the increasing requirements, coupled with the understaffing, lead to competing priority demands which reduce the ability of the environmental staff to perform its self-assessment function. Furthermore, existing resources are not being utilized effectively during a period of increasing demand.

Safety and Health

The Safety and Health (S&H) Subteam identified 93 concerns in the Safety and Health Program. Of the 93 concerns, four were ranked as Category II by application of the Technical Safety Appraisal criteria, requiring immediate corrective or compensatory action. The Category II concerns related to: 1) possible use of salvaged parts in critical safety systems without assurance that the required function had been maintained; 2) violation of DOE requirements for response to offsite transportation incidents involving hazardous materials; 3) unsafe practices in violation of DOE (Occupational Safety and Health Act) requirements, particularly with respect to hoisting and rigging and cryogenic safety; and 4) noncompliance with essential elements of the Life Safety Code. Corrective and/or compensatory actions are underway for each of these concerns.

The S&H Subteam noted that the GEND program appears to be on the threshold of transition to a more disciplined safety and health culture. There was an awareness at all levels of management in GEND and PAO on the importance of safety and health. However, a system to objectively assess program requirements has not been implemented.

Four causal factors contributed to these findings. First, there is not an organization that can provide independent oversight (i.e. the present organization is currently responsible for both line management and oversight). Second, a nonweapons quality assurance program is not fully functional. Third, a management program to develop, control, and document site-wide operations and functions has not been established. Finally, AL and PAO have not required GEND to provide a comprehensive site-wide hazards analysis.

The S&H Subteam identified noteworthy practices related to the extension of the Diamond Label Program for chemicals to include storage class and disposal class, formal documentation of the GE CARE program, and an excellent procedure for handling radiation-contaminated individuals.

Management

Over the past year, the Pinellas Plant has made commendable efforts to identify weaknesses in, and plan corrective actions to, its ES&H program. Systemic problems must be overcome in order to fulfill DOE's current expectations.

The communication and interpretation of ES&H policy from DOE to GEND, and within GEND, need to be improved. This includes establishing goals and objectives that can be owned and tracked throughout the organization and more effectively utilizing the Cost Plus Award Fee process.

To properly reflect the importance of ES&H, management systems within DOE and GEND need greater formality and more disciplined application. This includes the need for environmental and safety assessments, updating of policy and procedural documents, and the documentation of compliance with applicable regulations.

Management oversight of ES&H activities must be more rigorous by DOE and GEND. This includes not only the quality and quantity of appraisals, but also the definition of duties and responsibilities and the establishment of tracking systems to monitor and trend performance indicators and outstanding commitments.

Plans for ES&H improvements are generally appropriate to the accomplishment of DOE's expectations; however, the Management Subteam is concerned that a lack of technically qualified personnel in key positions jeopardizes the timely achievement of these plans. GEND and PAO are competing for a limited pool of experienced talent in the ES&H area. This shortfall of talent is exacerbated by the time necessary to acquire security clearances.

The probable root causes can be traced to an emphasis on production which has traditionally overshadowed interest in fully complying with environment, health and safety requirements. In addition, there is a widespread mindset that the Pinellas Plant poses no unusual or unique risks.

1.0 INTRODUCTION

On June 27, 1989, the Secretary of Energy, Admiral James D. Watkins, USN (Ret.), announced a ten-point initiative to strengthen environmental protection and waste management activities in the Department of Energy (DOE). A major initiative involves the conduct of Tiger Team Compliance Assessments at the Department's operating facilities. This report presents the Compliance Assessment of the Pinellas Plant in Pinellas County, Florida. The plant is owned and controlled by the U.S. Department of Energy and operated by General Electric Neutron Devices (GEND).

1.1 Purpose

The purpose of the Pinellas Plant Tiger Team Compliance Assessment is to provide the Secretary of Energy with concise information on the following:

- o Current environment, safety and health (ES&H) compliance status and associated vulnerabilities;
- o Adequacy of DOE and site contractor ES&H management programs;
- o Root causes for noncompliance; and
- o Response actions to address identified problem areas.

This information will be used to establish DOE-wide ES&H compliance trends and root causes. Correcting the root causes should lead to a higher level of excellence in DOE operations.

1.2 Scope

The scope of the Pinellas Plant Tiger Team Compliance Assessment is comprehensive and includes, but is not limited to, the following ES&H areas:

- o Compliance with applicable Federal, State, and local regulations, permits, agreements, and enforcement actions;
- o Compliance with DOE Order requirements for ES&H activities;
- o Adequacy of the DOE Albuquerque and Pinellas Area Office and the Site Contractor's ES&H management programs, including planning, organization, resources, training, and relationships with regulatory agencies;
- o Conformance with applicable "best" and "accepted" industry practices; and
- o Identification of root causes.

1.3 Approach

The Pinellas Plant Tiger Team Compliance Assessment was conducted in accordance with the Draft Tiger Team Guidance Manual, September 1989, together with "Performance Objectives and Criteria for Technical Safety Appraisals at

Department of Energy Facilities and Sites," January 1990, and followed accepted audit techniques. The assessment was conducted by a team of specialists managed by a Team Leader and three Subteam Leaders, one for each of the three disciplines of Environment, Safety and Health, and Management. Each of the Subteams was composed of technical specialists from other DOE offices and support contractors. Team members, their area of responsibility, and work-related experience are provided in Biographical Information sheets included as Appendix A.

A systematic flow down approach was implemented to perform the probable root cause analyses. This approach, depicted in Figure 1-1, begins with the analysis and evaluation of detailed background information and assessment data that are analyzed by the individual Subteams to develop their findings and concerns. These individual findings are integrated by these Subteams through identification of causal factors. The last step in the process is a collective determination of a minimal set of probable root cause(s) for the findings and concerns identified by the Subteams.

1.3.1 Pre-Assessment Site Planning

Planning for the Pinellas Plant Tiger Team Compliance Assessment included the issuance of an introduction and information request memorandum. Federal and State regulators were invited to attend and participate in the pre-assessment meeting. The pre-assessment site visit by the Tiger Team leader, the Subteam leaders and the entire management team occurred on January 3-4, 1990. The Albuquerque Operations Office, the Pinellas Area Office and General Electric provided overviews of site operations and the ES&H program. Discussions were held to inform the site representatives about the scope and purpose of the Tiger Team assessment program and necessary support requirements (office space, materials and office equipment, administrative support, etc.) for the actual assessment. Regulatory representatives from the State of Florida attended the pre-assessment site visit.

1.3.2 Onsite Activities

The onsite activities for the assessment took place from January 15 to February 2, 1990. Onsite activities included field observations, document reviews, review of previous audits and assessments, and interviews with DOE, contractor, and subcontractor site personnel. Personnel from Federal, State, and local regulatory agencies were also interviewed. An emergency exercise involving site personnel and the Pinellas County Emergency Management Administration was conducted on January 23, 1990.

1.3.3 Reporting

Section 2 is an overall summary of the key Tiger Team Compliance Assessment findings, concerns and noteworthy practices that were identified by the three Subteams. Sections 3 through 5 contain the Environment, Safety and Health, and Management findings and concerns, respectively.

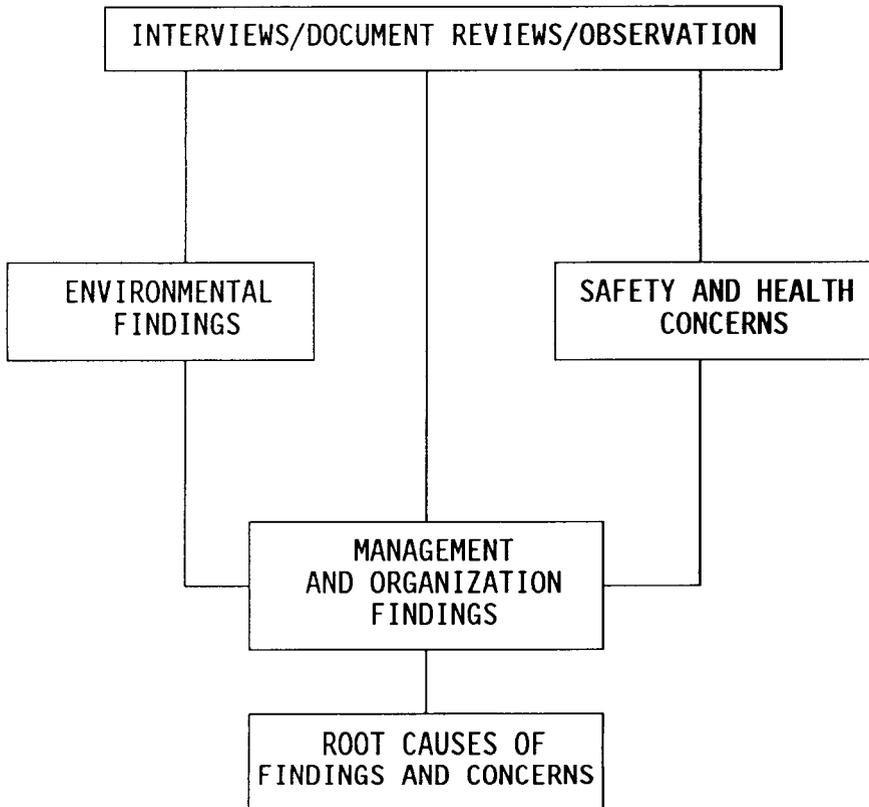


Figure 1-1. Tiger Team Compliance Assessment Approach

For the Environment and Management Subteams, each finding is categorized as either "Compliance Finding" or "Best Management Practice Finding." Compliance findings are conditions that, in the judgment of the Assessment Team, may not satisfy applicable environmental or safety and health regulations, DOE Orders (including internal DOE memoranda, where referenced), enforcement actions, agreements with regulatory agencies, or permit conditions. BMP findings are derived from regulatory agency guidance, DOE Draft Orders, accepted industry practices, and professional judgment. Within these categories, the finding is prefaced by a statement of Performance Objectives. The Performance Objectives for Regulatory Findings are derived from promulgated regulations and final DOE Orders, consent orders, agreements, and permit conditions. The Performance Objectives for BMP findings are derived from regulatory agency guidance, accepted industry practices, and professional judgment. The findings within each Chapter are not arranged in order of relative significance. In addition to these two types of findings, the Subteams identified practices that, in their judgment, may be noteworthy and have general application to DOE facilities and should be documented for the purposes of information transfer.

A Technical Safety Appraisal (TSA) was conducted by the Safety and Health (S&H) Subteam as part of the Tiger Team effort. The TSAs are operationally focused evaluations. As such, a TSA appraises how safely a facility or site is being operated and the condition of its equipment. The TSA format contained in the draft document, "Procedures for Conducting Technical Safety Appraisals," October 1989, was employed in order to maintain consistency and integrity in the TSA. The findings identified by the S&H Subteam were obtained in three ways: (1) observing routine operations, emergency exercises, and the physical condition of the site and facilities; (2) interviews with management, staff, operators, and craft personnel; and (3) reviewing policy statements, records, procedures, and other relevant documents. A concern addresses a situation that in the judgment of the S&H Subteam: (1) reflected less than full compliance with a DOE safety and health requirement or mandatory safety standard; (2) threatened to compromise safe operation; or, (3) if properly addressed, would substantially enhance the excellence of that particular situation even though that part of the operation was judged to have a currently acceptable margin of safety. Because of this last category for addressing the excellence of the operation, more concerns are reported than would result from a strictly compliance-oriented appraisal.

For the S&H Subteam, each concern is supported by several findings and has the characteristics of being explicit, stating the problem, being measurable (auditable) and being justifiable. Each concern is categorized by seriousness, potential hazard consideration and compliance consideration. Within these categories, the concern is prefaced by the statement of the Performance Objective in each discipline area. The Performance Objective and supporting Criteria used during the appraisal are pre-established as indicated in Section 1.3, "Approach."

In addition to identifying concerns, the S&H Subteam looked for exceptional practices in accomplishing Performance Objectives. The exceptional practices have been identified as "Noteworthy Practices" and are presented in Section 4.6 of this report. Other DOE facilities are encouraged to adopt these practices when they are applicable to their operations.

This assessment reflects a fixed point in time. As a result, improvements in the environment, safety and health areas that were planned, but were not completed at the time of the assessment, are identified as findings or concerns if the Tiger Team judged that failure to complete these improvements would have a significant impact.

The process taken to complete the assessment report includes submission of preliminary findings and concerns in a Draft Report to the Manager, Albuquerque Operations Office, and the site contractors at the conclusion of the onsite assessment for review for technical and factual accuracy. Their review comments, suggested changes, and modifications, as well as input from other Secretarial Offices, have been incorporated, as appropriate, into this Pinellas Plant Compliance Assessment Report.

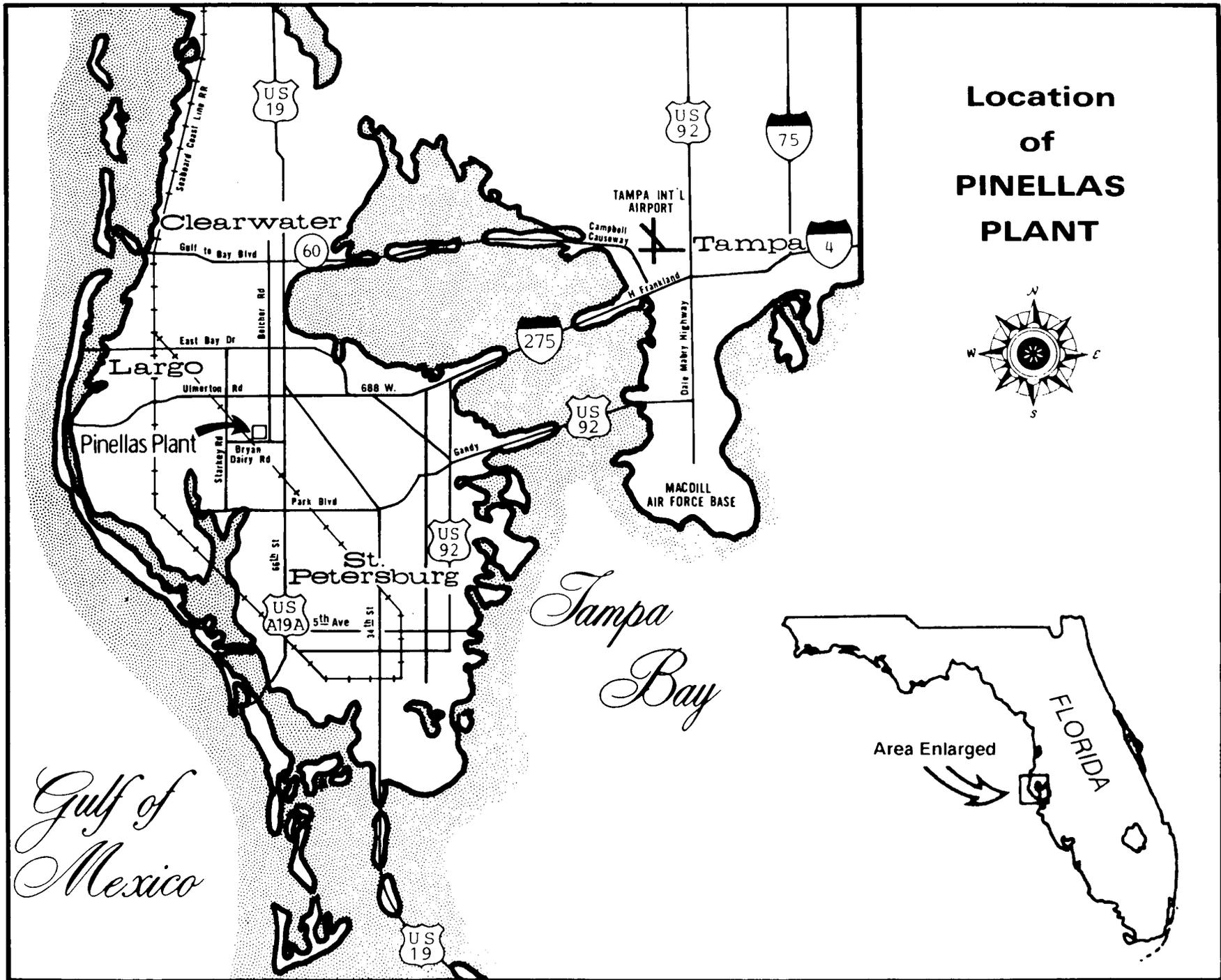
The Albuquerque Operations Office will prepare a draft Action Plan that addresses the concerns identified during the Tiger Team Assessment. The draft action plan will be submitted by the site through the Program Office to ES&H for their review and comment. The Secretary will approve the final Action Plan and direct its implementation.

1.4 Site Description

The Pinellas Plant is located near the center of Pinellas County, Florida, which is a peninsula bordered on the west by the Gulf of Mexico and on the east and south by Tampa Bay. Figure 1-2 is a general location map. The plant site, approximately 100 acres, is bordered on the east by Belcher Road, on the south by Bryan Dairy Road, and on the west by the Seaboard Coastline Railroad. Pinellas County and the Tampa Bay area in general have experienced dramatic increases in population over the last 30 years. When the plant was originally built in 1956 the central area of Pinellas County was a lightly populated farming area. Today, light industry and warehousing operations are in the area immediately surrounding the site. The closest residential areas are approximately 0.4 kilometers (0.25 miles) from the plant. Based on the 1980 census, Pinellas County is the most densely populated county in the State of Florida; it has 3064 residents per square mile. Population estimates for the major cities surrounding the site are St. Petersburg - 243,000; Clearwater - 98,000; Largo - 63,000; and Pinellas Park - 41,000.

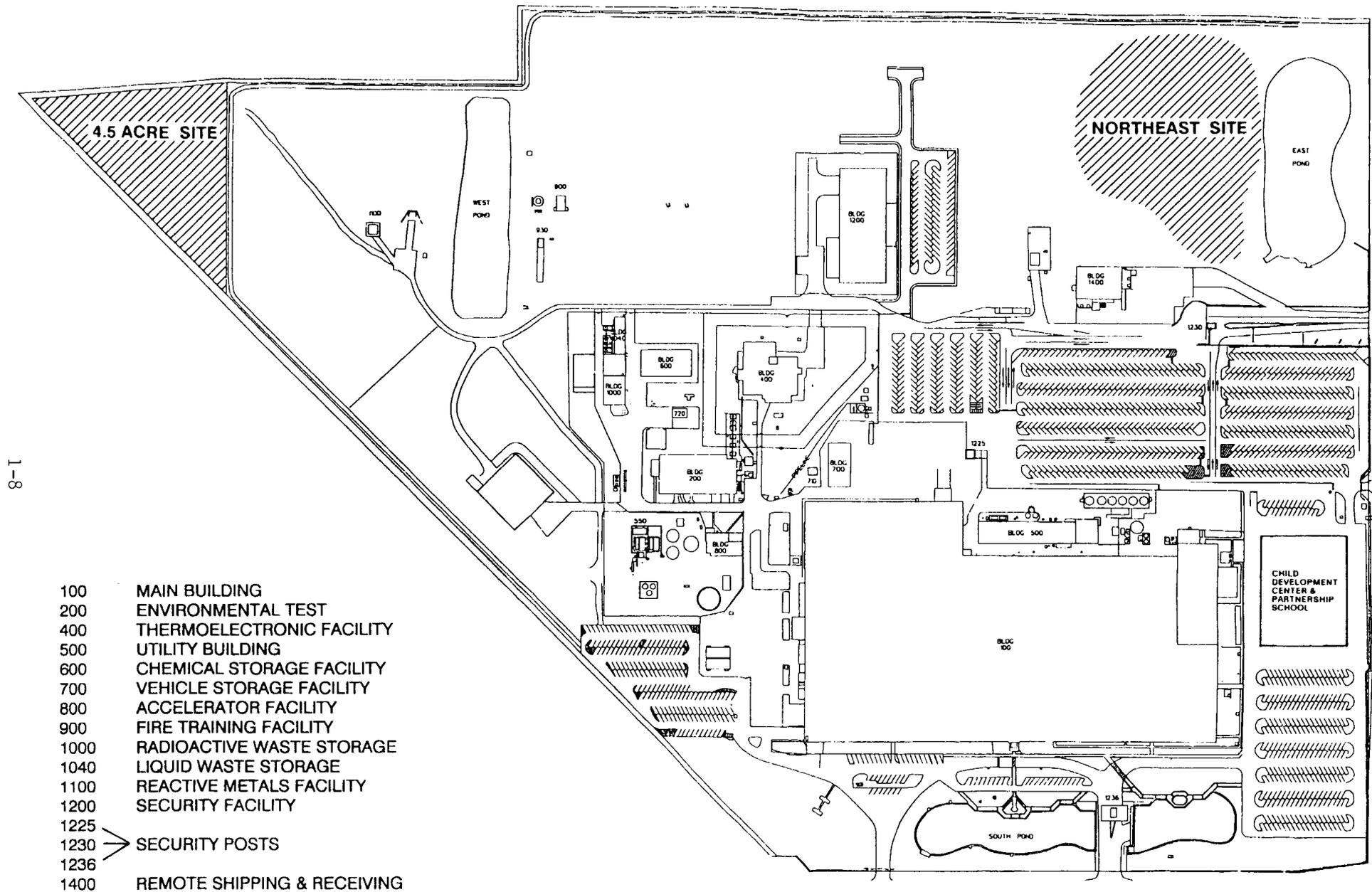
The Pinellas Plant employs approximately 1750 people. The plant is approximately 700,000 square feet in size. Figure 1-3 is a map of the plant site. The plant was built in 1956 to manufacture neutron generators, a principal component in nuclear weapons. Production of these devices necessitated the development of several uniquely specialized areas of competence and supporting facilities. The existence of these capabilities has led to the assignment of other weapon application products. In addition to the manufacturing facility, a production development capability is maintained at this plant. The plant's products include: neutron generators and detectors, vacuum switch tubes, electromagnetic devices, thermal batteries, radioisotopically-powered thermoelectric generators, frequency control devices, quartz digital accelerometers, lightning arrester connectors, ceramics, and foam support pads.

The hazards presented by operations on this site are typical of those associated with other commercial electronic development and manufacturing facilities. The principal hazards present on this site include radiation and radioactive materials at some facilities, industrial and occupational hazards throughout the site and in various facilities, and packaging and transportation of radioactive and hazardous materials.



1-7

Figure 1-2



1-8

- 100 MAIN BUILDING
- 200 ENVIRONMENTAL TEST
- 400 THERMOELECTRONIC FACILITY
- 500 UTILITY BUILDING
- 600 CHEMICAL STORAGE FACILITY
- 700 VEHICLE STORAGE FACILITY
- 800 ACCELERATOR FACILITY
- 900 FIRE TRAINING FACILITY
- 1000 RADIOACTIVE WASTE STORAGE
- 1040 LIQUID WASTE STORAGE
- 1100 REACTIVE METALS FACILITY
- 1200 SECURITY FACILITY
- 1225
- 1230 → SECURITY POSTS
- 1236
- 1400 REMOTE SHIPPING & RECEIVING

Figure 1-3 Site Map

2.0 KEY FINDINGS AND CAUSAL FACTORS

2.1 Environment

2.1.1 Key Findings

The Environment Subteam identified six key findings that represent potential compliance issues with regard to Federal and State regulations, or DOE Orders. These issues concern the following:

- o Addition of radioactive waste to non-radioactive classified waste to effect disposal as classified radioactive waste,
- o Incomplete documentation of dose-assessments,
- o Lack of comprehensive characterization of the inactive 4.5-acre waste site,
- o Deficiencies in the site-wide environmental monitoring program,
- o Groundwater onsite and offsite (the 4.5-Acre site) that is chemically contaminated above State standards, and
- o Failure to apply for air pollution permits.

Also of concern is a NEPA finding that the site is relying on an outdated site-wide Environmental Assessment which has no documented Finding of No Significant Impact (FONSI).

The key findings are summarized, and a description of their causal factors are presented in the next section.

2.1.2 Probable Causal Factors

The first key finding is that waste generators in Building 300 are mixing radioactive waste with classified, non-radioactive solid (nonhazardous) waste. Because the Plant could not readily dispose of its classified non-radioactive waste in the past, a small amount of radioactive waste is added to a drum of classified waste; the drum is shipped to the Savannah River Plant as "classified radioactive waste."

There are two probable causal factors for the problem. First, the waste generators are not sensitive to waste management and environmental concerns, and are thus unaware of the DOE Orders and the GEND policies which require minimization of radioactive waste. Second, the competing demand of performing line management functions with ES&H activities has overburdened the PAO and GEND ES&H staffs to the extent that they are unable to exercise a routine oversight role.

The second key finding relates to not fully documenting the methodologies and the actual dose assessment calculations at the site. The site has not documented the basis for omitting dose calculation resulting from several pathways. Computer programs used to calculate doses are not correctly

documented. Finally, stack flow rates used in the calculations are estimated rather than measured.

The causal factors for these deficiencies can be traced to lack of quality assurance and to the low priority assigned by Plant management to environmental radiation issues, given the relatively small amounts of radioactive materials subject to potential release.

The lack of comprehensive characterization of inactive waste sites and the groundwater contamination findings are discussed here together because the facts and causes of the findings are closely associated. There are two distinct plumes of chemically contaminated groundwater in excess of State standards. One is mostly offsite and is associated with the "4.5-Acre Site" which was previously owned by DOE and is now privately owned. Studies have been done which incompletely define the nature and extent of the contamination. An initial Interim Remedial Measure consisting of pumping and discharging the effluent to the community sewer system was implemented but halted. This was due to the contaminant levels in the discharge being higher than anticipated. The site has relied on studies by outside contractors (or the USGS), which have later turned out to be lacking in some respects. However, the site has proceeded in a judicious manner, with the advice and approval of the Florida Department of Environmental Regulation, and there is no evidence of any imminent hazard to public health or the environment from the plume.

The probable causal factor of both these findings is a lack of technical oversight of these activities at both the Pinellas Plant (PAO and GEND) and at AL.

The key finding concerning the environmental monitoring program involves the site's lack of progress toward complying with requirements of DOE 5400.1. Specifically, the preparation of a plan for a Groundwater Management Protection Program, preparation of a site-wide Environmental Monitoring Plan, and the development of an onsite meteorological monitoring program will not be available on a schedule consistent with DOE requirements.

The causal factors attributed to this finding are the lack of staff resources necessary to carry out effective planning, and management's decision to assign less importance to environmental requirements relative to other operational concerns.

The final key finding is that the Pinellas Plant has failed for several years to submit permit applications for its air emissions sources. Pinellas Plant has been aware that many of its air emissions sources were most likely subject to the State of Florida permitting regulations. They have not applied for the permits, nor have they developed the source characterization information necessary to make the applications.

The principal causal factor of this finding is failure of Pinellas Plant management and cognizant AL officials to implement current DOE policy on environmental compliance coupled with the conflicting signals given to the Pinellas County Air Quality Division by PAO.

2.2 Safety and Health

2.2.1 Key Findings and Noteworthy Practices

Although the S&H Subteam expressed concerns in all except one of the health and safety disciplines examined during the appraisal, the most important concerns, based upon potential hazard considerations and compliance considerations, were related to Organization and Administration, Quality Verification, Technical Support (Packaging and Transportation), Site/Facility Safety Review, Training and Certification, Emergency Preparedness, Occupational Safety (OSHA), and Fire Protection (Life Safety Code).

The key concerns in these areas indicate the following:

- o A site-wide safety assessment does not exist to identify hazards of a type and magnitude not normally encountered and accepted by the public.
- o The quality control system does not ensure that used electrical control devices will function as intended or that salvage parts used in critical systems are functional (Category II).
- o Packaging and transportation operations do not fully meet the requirements of DOE 5480.1A, DOE 5480.3, DOE 1540.1, DOE 1540.2, DOE 5482.1B, DOE 5700.6B, DOE 5820.2A, and 40 CFR 112 (Category II).
- o The Occupational Safety Program has not implemented an effective program for identifying, evaluating, and resolving potential safety and health concerns. The Pinellas Plant has potential serious hazards and code violations as related to DOE and OSHA requirements, particularly with respect to hoisting and rigging and cryogenic safety (Category II).
- o The Fire Protection Program has not implemented an effective program to ensure compliance with NFPA 101, "Life Safety Code," requirements (Category II).
- o The emergency preparedness program has not: 1) incorporated credible hazards or consequence assessments into the emergency plans; 2) developed emergency plans for specific buildings; 3) implemented procedures for emergency actions; or 4) provided adequate levels of training for spills of hazardous materials.
- o Training is not supported by GEND policy and standards or established uniformly across the Pinellas Plant.
- o The safety review functions required by DOE 5482.1B are not being performed by GEND or PAO.

The remaining concerns are important because, taken together they indicate far reaching deficiencies and causal factors, although individually, they are not severe enough to identify specifically in this subsection. These concerns

indicated inconsistencies over several disciplines pointing to a lack of common direction regarding DOE requirements.

The Category II concerns cited above, addressing a significant risk or substantial noncompliance with DOE Orders (but not involving a situation for which a clear and present danger exists to workers or members of the public), addressed the potentially serious hazards and code violations as related to DOE and OSHA requirements, DOE requirements for packaging and transportation operations, DOE requirements for QA testing of salvaged used equipment, and the lack of a fire protection program to ensure compliance with NFPA 101, "Life Safety Code," requirements. A near-term solution to these problems needs to be initiated by GEND.

The following Noteworthy Practices were observed in the Industrial Hygiene and Medical Services Programs:

- o Implementation of the Chemical Labeling Program throughout the facility to include storage class and disposal class,
- o Formal documentation of the GE CARE program, and
- o An excellent protocol for handling radiation-contaminated persons.

2.2.2 Causal Factors

Based on analyses of the findings and concerns developed during the course of this appraisal, four causal factors have been identified. First, the ES&H organization has a dual role of performing line safety responsibilities as well as independent safety overview. A disciplined safety and health culture has not been fully accepted at the Pinellas Plant. Second, a QA program has not been developed and established for the nonweapons related functions such as health, safety, and quality verification. Third, a management program to develop, control, and document site-wide operations and functions has not been established for health and safety purposes. Finally, AL and PAO have not required GEND to provide: 1) a safety assessment of site activities to establish ranking of hazards as well as relative risks of operations; and 2) the safety oversight functions required by DOE for the site-wide operations, health and safety performance, follow-ups for safety concerns, or UORs and lessons-learned activities.

2.3 Management

2.3.1 Key Findings and Noteworthy Practice

The Management Subteam found a recurring response from GEND managers that they were faced with many "new" DOE requirements. In pursuing with them what these new DOE requirements were, the areas to which they referred were requirements that had been in effect for a minimum of several years (e.g., independent safety appraisals, safety analyses, emergency preparedness, occupational safety, and fire protection). The Tiger Team's review indicated that what was "new" (and in some cases still not clearly transmitted) was the PAO, AL and DP message to GEND that nothing less than full compliance in all ES&H areas is required. To the Management Subteam, the above explains the "catch-up" mode

that Pinellas Plant management is experiencing with respect to meeting current DOE ES&H expectations, and more particularly the nature of the Management Subteam's findings. These findings can be generally characterized as follows:

- o Insufficient PAO direction to and oversight of GEND with respect to Pinellas Plant ES&H,
- o Inadequate PAO and GEND resources to carry out planned ES&H activities,
- o Inadequate management systems for monitoring and controlling ES&H activities, and
- o Inadequate formal assessment for management decisions with respect to environment, safety, and health.

Findings and concerns from the Environment Subteam and the Safety and Health Subteam were supportive of findings in all of the above areas.

Most of the Management Subteam's findings had been recently identified by PAO and GEND through a self-assessment. A draft long-range improvement plan has been developed to correct these identified weaknesses.

One Noteworthy Practice was identified by the Management Subteam, with respect to a GE Corporate self-appraisal and planning program (the Pulse Program) for health, safety and environmental protection.

2.3.2 Probable Root Causes

There are at least two probable root causes for the deficiencies observed at the Pinellas Plant.

First, emphasis on production has traditionally overshadowed interest in fully complying with environment, safety and health requirements. There is a perception shared by PAO and GEND, that GEND has been for many years satisfactorily achieving DOE's expectations. This perception has been reinforced by actions by DOE, such as appraisals and award fee determinations. Expectations now are clearly changing, but AL, PAO and GEND are having some difficulty adjusting rapidly enough.

Second, there is a widespread mindset that the Pinellas Plant poses no unusual or unique risks. The surrounding high density of similar light industry has contributed to the sense that environment, safety and health risks to the community are acceptably low. The plant personnel did not fully appreciate the need to quantify the risks associated with the plant's operations. Operation of the plant since 1957 gives no indication of adverse effects to the surrounding population.

3.0 ENVIRONMENTAL ASSESSMENT

The environmental assessment report presents the findings identified by the Environmental Subteam during the Tiger Team Assessment of the Pinellas Plant conducted from January 15 to February 2, 1990.

3.1 Purpose

The purpose of the environmental assessment is to provide the Secretary of Energy with information on the current environmental regulatory compliance status and associated vulnerabilities of each facility, causal factors for noncompliance, adequacy of DOE and site contractor ES&H management programs, response actions to address the identified problem areas, and DOE-wide ES&H compliance trends.

3.2 Scope

The scope of the Pinellas Plant environmental assessment was comprehensive, covering all environmental media and applicable Federal, State, and local regulations, requirements, and best management practices. The environmental disciplines addressed in this assessment include air, soil, surface water, hydrogeology, waste management, toxic and chemical materials, radiation, quality assurance, and inactive waste sites. The assessment also addressed National Environmental Policy Act (NEPA) requirements.

3.3 Approach

The environmental assessment at the Pinellas Plant was conducted in accordance with the Draft Tiger Team Guidance Manual, September 1989, and followed accepted audit techniques. The Environmental Team Assessment Plan is provided in Appendix B.

The Pinellas Plant environmental assessment was conducted by a team managed by a Team Leader from the Office of Environmental Audit, and technical specialists from other DOE offices and support contractors. The names, responsibilities, affiliation, and biographical sketches of the team members are provided in Appendix A.

A Pre-Assessment Site visit was conducted on January 3-4, 1990. The Pinellas Area Office (PAO) and the site operating contractor, General Electric Company-Neutron Devices Department (GEND) provided an overview of site operations and of the ES&H program. Discussions were held to provide the site with the scope and purpose of the Tiger Team Assessment program and needed support requirements for the actual assessment.

The onsite activities for the environmental assessment took place from January 15 through February 2, 1990. Onsite activities included: document review; observation of site operations; interviews with DOE and site contractor personnel, and personnel from Federal, State and local regulatory agencies; and review of previous audits and assessments.

The findings are presented under chapters identified by media (e.g., Air, Surface Water, Waste Management), or regulation (e.g., National Environmental Protection Act). Each finding is preceded by a Performance Objective. The

Performance Objectives for compliance findings are derived from promulgated regulations and DOE Orders, consent orders, agreements, and permit conditions. The Performance Objectives for Best Management Practice (BMP) findings are derived from regulatory agency guidance, accepted industry practices, and professional judgment. Section 2.1 contains a summary of the more significant environmental findings.

3.4 Environmental Assessment Summary

A total of 61 findings were identified during the environmental assessment of the Pinellas Plant. None of the findings reflect problems that present an imminent risk to public health or the environment from continued operation of the Pinellas Plant.

Federal, State, and County regulators were invited to attend and participate in all assessment activities. Representatives from the Florida Department of Environmental Regulation, and the Pinellas County Sewer System attended the Pre-Assessment In-Briefing, and participated in some meetings. They did not express any specific concerns.

LINE MANAGEMENT AND ES&H OVERSIGHT

As part of the assessment, the Environment Subteam reviewed several internal Pinellas Plant reports on environmental compliance, including the Monthly Environmental Compliance Reports (SEN-7), reports on Surveys and Appraisals by the Pinellas Area Office, and Appraisals by Albuquerque Operations Office (AL). The purpose was to determine the adequacy of the facility's systems for self-appraisal of ES&H.

The Sen-7 reports from PAO are not complete or accurate, and do not reflect the existing guidance to the level necessary to assure achievement of the objectives set forth in the Secretary Notice.

The Environment Subteam identified 15 compliance-related findings of which Pinellas Plant staff were aware, but which do not appear in the SEN-7 reports submitted to date or are incorrectly characterized. Four of these are key findings in the Environment Subteam assessment.

Guidance provided by S-1 and EH-1 in August 1989 directs that each SEN-7 report is to address the adequacy of staff and financial resources to meet all environmental requirements. The September and October reports contain no discussion of resources. Throughout the Tiger Team Assessment, however, the Tiger Team, PAO, and GEND consistently have identified lack of resources as a major factor in not meeting compliance requirements.

The SEN-7 Notice specifies that the review and report preparation is to be performed solely by DOE employees. At least two of the PAO SEN-7 reports were prepared to some extent by GEND employees (I-TL-1,2,-3).

A detailed discussion of these problems is contained in Management Section Finding MGMT.9.

As a further effort at self-assessment, the PAO ES&H staff schedules surveys, which are walk through inspections once per month. However, the last survey actually performed was in September of 1989 (TL-3). Although DOE 5482.1B requires regularly scheduled ES&H Appraisals by AL, none have been performed at the Pinellas Plant (I-TL-1).

GEND does not perform any self-assessments or appraisals in the environmental area (I-TL-2).

In summary, there are significant deficiencies in the line management ES&H oversight functions at the Pinellas Plant. These deficiencies are covered by findings in the Management Section of this report.

RISK ASSESSMENT AND PRIORITIZATION

Neither PAO nor GEND have any system or process to prioritize identified environmental problems and associated corrective actions based on objective criteria such as quantified assessment of risks. Priorities are set by direction of AL for some projects such as preparation of the Environmental Restoration Work Plans, the Five-Year Plan, and the Waste Management Site Plan. Most other priorities are set by informal discussions between the Area Office Manager and his staff (I-TL-1). GEND sets priorities on a subjective basis through discussions between the EH&SP manager and his staff, with PAO EH&S staff concurrence (I-TL-2).

DISCUSSION OF FINDINGS

The environmental assessment identified 40 findings representing compliance issues and 21 findings concerning nonattainment of acceptable best management practices. None represent an undue risk to public health and the environment from continued operation of the Pinellas Plant. However, the assessment does indicate a significant problem with environmental management for a facility with the size and type of operations of the Pinellas Plant. The key findings and root causes are discussed below. Table 3.4-1 lists all the environmental findings.

The Environment Subteam identified six key findings which represent potential compliance issues with regard to Federal and State regulations, or DOE Orders. These concern: the purposely generating radioactive waste in order to solve a classified waste problem; inadequate documentation of dose assessments; lack of adequate characterization of an inactive waste site; deficiencies in the site-wide environmental monitoring program; groundwater on-and offsite which is chemically contaminated above State standards; and failure to apply for air pollution permits.

A more detailed discussion of the key findings is contained in Section 2.1. Although not a key finding, one NEPA finding concerns reliance of the site on a site-wide Environmental Assessment which has no documented Finding of No Significant Impact and which is outdated.

As part of the environmental assessment, the Environment Subteam checked the status of the Pinellas Plant's actions to correct the findings of the 1987 Environmental Survey. Of the 36 survey findings, 18 were determined by the Environment Subteam to be currently non-issues. The Pinellas Plant staff

has notified AL that corrective actions are complete for 27 out of the 36 findings. Nine are being carried as open, continuing actions. Of those 27 completed actions, the Environmental Subteam determined 12 to be current issues, on which findings are based. Of those 12 current issues, 6 represent actions which the Environmental Subteam could not certify to have actually been completed. The other six fall into two categories. The first category represents problems of a similar nature to the original survey finding, but which are illustrated by different particular examples or locations (such as hazardous materials stored without secondary containment, but in a different location than was noted in the survey). The second category represents survey findings on lack of procedures. The necessary procedures have been developed, but the procedures are not being followed. Table E-1 in Appendix E presents a detailed summary of the findings update. Finding MGMT.14 in the Management Section discusses these problems.

Table 3.4-1

<u>FINDING NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
A/CF-1	Absence of Air Permits	3-10
A/CF-2	Tritium Stack Releases - Procedure Deviations and Sampling Deficiencies	3-12
A/CF-3	Compliance with County and State Air Quality Regulations	3-14
A/CF-4	Absence of a Meteorological Program	3-15
A/CF-5	Kanne Chamber Calibration Inadequacies	3-15
A/CF-6	Plutonium Stack Sampling Deficiencies	3-16
A/CF-7	Vapor Degreasers Management Deficiencies	3-16
A/CF-8	Lack of Proper Notification Concerning Fire Training Activities	3-17
A/BMPF-1	Ambient Air Monitoring Deficiencies	3-18
A/BMPF-2	High Efficiency Particulate Air Filtration (HEPA) Testing Program	3-20
A/BMPF-3	Lack of Instrumentation to Verify Scrubber Operation	3-20
A/BMPF-4	Absence of an Air Toxic Emissions Inventory	3-21
A/BMPF-5	Lack of Silica Gel Tritium "Breakthrough" Documentation	3-22
A/BMPF-6	Vehicular Fuel Dispensing Requirements	3-22
SS/BMPF-1	Lack of Background Plutonium Soil Sampling Location	3-27
SW/CF-1	Failure to Comply with Reporting Requirements Under Pretreatment Regulations	3-32
SW/CF-2	Industrial Discharge Permit Exceedances and Design Deficiencies at the Waste Water Neutralization Unit (WWNU)	3-33
SW/CF-3	Inadequate QA/QC of Wastewater Sampling and Sampling Procedures	3-33
SW/CF-4	Potential Discharge of Radionuclides to Chemical Drain Systems	3-35
SW/CF-5	Inconsistent Environmental Monitoring Procedures for Tritium in Surface Water	3-36
SW/CF-6	Deficiencies in SPCC Plan	3-36
SW/BMPF-1	Unacceptable Risk of Bypassing Pretreatment System	3-37
SW/BMPF-2	Inadequate Procedure for Determining Toxic Discharge to the Waste Water Neutralization Unit (WWNU)	3-38
SW/BMPF-3	Stormwater Discharge Permits Have Not Been Adequately Addressed	3-38
SW/BMPF-4	Incomplete Inventory of Facility Drains	3-39
SW/BMPF-5	Unacceptable Risk from a Deactivated High Level Alarm	3-40

Table 3.4-1 (Continued)

<u>FINDING NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
SW/BMPF-6	Inadequate Training of Wastewater Treatment Plant Operators	3-41
GW/CF-1	Groundwater Contamination	3-45
GW/CF-2	Inadequate Characterization of the Hydrogeologic Regime	3-48
GW/CF-3	Inadequate Abandonment of Groundwater Wells	3-49
GW/CF-4	Inadequate Groundwater Monitoring Program	3-51
GW/BMPF-1	Inadequate Groundwater Monitoring Well Maintenance	3-52
WM/CF-1	Combining Mixture of Classified Wastes with Radioactive Wastes for the Purpose of Disposal	3-56
WM/CF-2	Disposal of Characteristic Wastes (Extraction Procedure Toxic-Lead) in Nonhazardous Waste	3-56
WM/CF-3	No GEND Requirement or Operating Procedure Requiring Drums of Hazardous Waste be Secured During Transportation Onsite	3-57
WM/BMPF-1	Solid Waste Segregation Practices Are Not Implemented Uniformly	3-57
TSCA/CF-1	Unavailability of Annual PCB Reports	3-62
TSCA/CF-2	Underground Storage Tanks (UST) RCRA Closure Requirements	3-62
TSCA/CF-3	Inadequate Spill Containment of Hazardous Chemicals	3-62
TSCA/CF-4	Incompatible Material Storage	3-63
QA/CF-1	Audits of the Environmental Monitoring Program Are Not Performed on a Scheduled Basis	3-67
QA/CF-2	Chain-of-Custody Procedure Not Being Followed Completely	3-67
QA/BMPF-1	Deficiencies in Good Laboratory Practices	3-68
R/CF-1	Deficiencies in Dose Assessment Methodologies	3-74
R/CF-2	Lack of Complete Documentation of Radiochemistry Laboratory-Developed Computer Programs	3-75
R/BMPF-1	Environmental "As Low As Reasonably Achievable" (ALARA) Program Deficiencies	3-76
IWS/CF-1	Lack of Adequate Information to Implement a Complete Remedial Action	3-81
IWS/CF-2	Lack of a Developed and Implemented Community Relations Plan	3-82
IWS/CF-3	Failure to Submit Correct EPCRA 311 Information	3-82
IWS/CF-4	Failure to Submit a Complete EPA Form R	3-83
IWS/BMPF-1	Incomplete Distribution of EPCRA Reports	3-84
IWS/BMPF-2	Incomplete Spill Reporting Procedure	3-85
NEPA/CF-1	Lack of NEPA Compliance Strategy	3-88
NEPA/CF-2	Inadequate Tracking and Record Keeping for NEPA Documentation	3-89

Table 3.4-1 (Continued)

<u>FINDING NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
NEPA/CF-3	Deficiencies in the 1983 Site-Wide Environmental Assessment	3-89
NEPA/CF-4	Inappropriate NEPA Review Process by the Albuquerque Operations Office	3-91
NEPA/CF-5	Inappropriate NEPA Determinations and Inadequate Documentation	3-91
NEPA/BMPF-1	Inattention to NEPA Compliance at Pinellas Plant	3-92
EMS/CF-1	Anticipated Noncompliance with DOE 5400.1	3-95
EMS/CF-2	Deficiencies in the Annual Environmental Reports	3-95
EMS/CF-3	Inadequate Oversight, Compliance, and Consistency with Respect to Environmental Monitoring and Surveillance Procedures	3-96

3.5 Environmental Assessment Findings

3.5.1 Air

3.5.1.1 Overview

The purpose of the air portion of the environmental assessment of the Pinellas Plant was to assess the current operating practices with regard to: (1) regulations promulgated under the Clean Air Act, Florida Rules and Regulations on Air Pollution, and other pertinent statutes; (2) DOE Orders; and (3) best management practices. Table 3.5.1-1 lists applicable regulations and DOE Orders used to evaluate the air discipline.

Tritium gas and tritium oxide are discharged from the Bldg. 100 laboratory (west main stack), the Bldg. 200 stack and the Bldg. 800 stack, while tritium gas, tritium oxide and krypton-85 gas are discharged from the Bldg. 100 main exhaust stack (east main stack), all of which are monitored. The majority of the nonradiological air emission sources at the plant are in Bldg. 100 and Area 300, which encompass most of the manufacturing and engineering areas at the Pinellas Plant. It is estimated that there are over 500 individual air emission exhausts at the Pinellas Plant. Bldg. 500 houses diesel generators and a standby boiler that are sources of criteria pollutant emissions. The major class of compounds emitted to the atmosphere from the Pinellas Plant is volatile organic compounds.

The general approach to the air assessment included the following activities: (1) a physical examination of major facilities and major sources, including emission control systems; (2) interviews with the Pinellas Plant personnel; (3) an examination of the Pinellas Plant ambient air quality monitoring network; and (4) a review of site documents and files.

The air portion of the environmental assessment identified eight compliance findings and six best management practice (BMP) findings. The nature of these findings demonstrate that the Pinellas Plant air pollution and air radiological programs need further attention. The principal air finding deals with the absence of air permits for sources subject to State and County regulations. Although Pinellas Plant staff have recently initiated discussions with county authorities on the air permits issue, the staff has not carried out the necessary studies to determine the existing sources that need Air Operation Permits. Also, Air Construction Permits have not been obtained for new or modified sources. Although the quality and credibility of some of the monitored radiological emissions and ambient air data are somewhat questionable, analysis of potential sources indicates that the radiological emissions and the ambient impact of the plant are not significant.

Table 3.5.1-1
List of Applicable Air
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Title</u>	<u>Authority</u>
Clean Air Act	40 CFR Part 61, Subpart H, NESHAPS for Radionuclide Emissions from DOE Facilities	EPA
Florida Department of Environmental Regulation	Chapter 17-2/Air Pollution	Florida
Pinellas County	Ordinance 79-26	Pinellas County
Pinellas County	Ordinance 81-21	Pinellas County
DOE 5400.1	General Environmental Protection Program	DOE
Draft DOE 5400.xy	Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE 6430.1A	General Design Criteria	DOE

3.5.1.2 Compliance Findings

A/CF-1 Absence of Air Permits

PERFORMANCE OBJECTIVE: Chapter 17 - 2.210 of the State of Florida Rules and Regulations on air pollution requires the owner or operator of any source that emits air pollutants to obtain a permit from the Florida Department of Environmental Regulation (FDER) prior to beginning construction, modification, or initial or continued operation of the source, unless exempted.

FINDING: The Pinellas Plant operates a number of air pollution sources subject to Chapter 17 - 2.210 that do not have Air Operation Permits. The Pinellas Plant staff has not carried out the necessary studies to determine the existing sources that need Air Operation Permits. Air Construction Permits have not been obtained for new or modified sources at the Pinellas Plant.

Air Operation Permits

A summary of chronological events will establish the context for this part of the finding. The Pinellas County Air Quality Division (PCAQD) regulates air pollution sources in Pinellas County as an agent for the FDER. As of 1981, Air Operation Permits were required for air pollution sources in the County. At a 1982 PCAQD inspection of the Pinellas Plant and a subsequent meeting, DOE personnel told the County inspector that the Pinellas Plant was exempt from State and local air quality regulations (A-6). PCAQD did not conduct any additional inspections of the Pinellas Plant until 1989. Since 1986, the responsible DOE manager from the Pinellas Area Office (PAO) has indicated that he has had periodic discussions with the Director of the PCAQD, and that no concerns about the Pinellas Plant were raised (I-A-31).

In December 1989, the Chief Counsel of the Albuquerque Operations Office reviewed the application of air pollution regulations to the Pinellas Plant and evaluated three alternative courses of action to address the absence of air permits. The Chief Counsel recommended the following course of action: (a) the Pinellas Plant should develop a detailed emission inventory including all information needed to submit for air permits in 1990; (b) the Pinellas Plant should obtain concurrence from the County that submittal of annual operating reports (that provide some information on annual plant emissions) would suffice to meet operating permit requirements for the present; and (c) the Pinellas Plant should not submit formal permit applications until such time in the future as the County requests it. Recommendation (c) was apparently made because the Chief Counsel understood that, because of staff limitations, the PCAQD would view any request for formal permitting from the Pinellas Plant as something of a disruption (A-6). Implementation of this alternative would not be consistent with current DOE environmental policy on the need for aggressive facility efforts to achieve compliance.

At the present time, no sources at the Pinellas Plant have Air Operation Permits or Construction Permits. In late 1989, the responsible PAO manager set up a meeting with PCAQD to discuss permitting requirements. The PCAQD has recently transmitted a letter to the Pinellas Plant that identifies particular existing sources that need State air permits (including radiological sources

that need to be permitted under the National Emission Standard for Radionuclide Emissions from DOE Facilities), and that requests additional information on other sources (A-20). A PCAQD staff member has indicated that the Division has sufficient resources to process the Pinellas Plant permits for the requested sources within the required 60-day period (I-A-30). He has characterized the Pinellas Plant's efforts on this issue as cooperative.

Absence of Studies to Determine Sources to be Permitted

The Pinellas Plant has not carried out a comprehensive study to identify sources that may need Air Operation Permits, and sources that may be exempt. Information on issues such as operations, emission levels, and control equipment need to be provided. Because there are about 500 vents on the roof of the main building, and the vent-process configuration is known only for certain sources, development of a comprehensive emission inventory will be a substantial task. A small portion of this work has been conducted by GEND personnel. However, at the time of the Tiger Team Assessment, cognizant GEND staff could not identify any specific air sources which might need to be permitted (I-A-7). (The PCAQD has, however, identified some sources (I-A-30)).

Air Construction Permits

During the Tiger Team Assessment, a team member noted that a new aluminum and zinc flame spray system was being installed in Area 139. The new system, similar to an existing system in place, would be a source of some particulate matter, and would be served by a waterfall wash. The system will be operational in February 1990 (I-A-9). An air construction permit to be issued by the FDER prior to the construction of this source might be required by Chapter 17-4 (the Florida Rules on Permits). However, Environmental Health and Safety Programs staff were not aware that this source was being constructed. Also, the floor manager, responsible for the operation of this process, was not aware of these permitting requirements (I-A-9). Subsequent discussions with Environmental Health and Safety Programs staff revealed that Air Construction Permits have never been obtained for any new or modified Pinellas Plant sources (I-A-10).

In summary, Air Operating and Construction Permits have not been obtained because of the absence of pressure from the local and State air regulatory agencies, and because the Pinellas Plant has not taken the initiative in gathering and submitting the required data. Until late 1989, there has been a lack of focus by Pinellas Plant staff on the need to permit existing emission sources. It should be noted, however, that many (although not all) sources are minor emitters of air pollution. Also, at the present time, there is no mechanism in place to evaluate the need for, and to obtain construction permits.

The cause appears to be related to policy, the availability of staffing resources for addressing these issues, and the experience of personnel working in this technical area.

A/CF-2 Tritium Stack Releases - Procedure Deviations and Sampling Deficiencies

PERFORMANCE OBJECTIVE: Environmental Monitoring Procedure EM-1.02 "Tritium Stack Releases - Monthly Columns" stipulates sampling equipment, procedure, locations, schedule, calibration, and review of results. Health Physics procedure HP-10 "Health Physics Daily Routines," specifies copper oxide furnace inspection and reporting requirements. Environmental Monitoring Procedure EM 1.01 "Tritium Stack Releases - Daily Columns," specifies orientation of silica gel columns and rotameter calibration. Stack sampling should be performed in a manner that ensures compliance with Federal and DOE requirements in 40 CFR Part 61, DOE Orders 5484.1 and 5400.1, and draft DOE Order 5400.xy.

FINDING: Procedure deviations were noted at the Bldgs. 100 East, 100 West, 200, and 800 stacks and sampling deficiencies were noted at the Bldgs. 100 East, 100 West, and 200 stacks which may in some cases, compromise the quality and defensibility of sampling data and subsequent dose calculations. Deviations and deficiencies are listed below:

Procedure EM-1.02 - "Tritium Stack Releases - Monthly Columns"

- o Step 3.2, as it relates to the copper oxide furnace, states, "Notify Environmental Protection of repairs, temperature deviations, or overdue calibration." None of the furnaces have stickers indicating periodic calibration frequency and next due date. Stickers are on the furnaces, which state, "Does Not Require Calibration." Although further investigation revealed that calibrations are performed every 12 weeks (I-R-14), there is an inconsistency in labeling and the stated procedure.
- o Step 3.3 states, "For the Building 100 Main and Laboratory and the Building 200 Columns: Read and record the calibrated rotameter readings daily. Check the calibration date on the side of the rotameter..." None of the rotameters at the stated locations have calibration stickers on them.
- o Step 3.4, referring to installation of new silica gel columns, states, "Install a new silica gel column, ensuring that the air flow through the column is from the top (i.e., capped end) to the bottom." The gas + oxide column observed in Bldg. 200 was hooked up in reverse on January 17, 1990 (I-R-7).

Procedure HP-10 - "Health Physics Daily Routines"

- o Step 3.4.4, with regard to Health Physics Daily Routines, states, "Ovens that house the copper oxide reactors are checked to ensure that the temperature meter's indicating needle is at the proper set point. If not working, Instrument Calibration and Maintenance is contacted for repair, and a Health Physicist is notified." During an inspection of the Bldg. 100 West stack sampling setup on January 1, 1990, the catalytic furnace was not operating (I-R-11). It was cold to the touch and the digital readout was also not operating. The site escort called IC&M immediately to report the

problem. Follow-up by site personnel indicated a fuse was blown, and the daily routine check had been done prior to 8:40 am, and the furnace outage was not reported as required by HP-10 (I-R-19). The fuse was replaced in time for weekend operation. A copy of a furnace temperature log which is now an attachment to HP-10 including date, temperatures, and initials was provided on January 26, 1990 as a result of this observation.

Procedure EM-1.01 - "Tritium Stack Releases - Daily Columns"

- o Step 3.5, with regard to daily silica gel columns, states, "The axis of the column should be in a vertical orientation." During an inspection of the Bldg. 100 West stack on January 19, 1990, daily columns (2 in series) were not in a vertical orientation (I-R-11).
- o Step 6.0, referring to calibration of Rotameters specifies annual calibration of rotameters used for daily samples. Rotameters at both Bldgs. 100 West and 100 East stacks had no calibration stickers on them. Furthermore, Section 2.0 of the procedure does not specify that a rotameter is part of the sampling equipment.

Sampling Deficiencies - Probe Location

- o The sample extraction probes for the Bldgs. 100 East and 100 West stacks are located about one foot from the top of the stack, which does not conform with the guidance in draft DOE 5400.xy on the location of sample extraction sites. At the 1-foot location, the wind could affect the representativeness of the samples collected. The site is aware of this situation and has an approved project budgeted for fiscal year 1990 to correct this.

Sampling Deficiencies - Building 200 Tritium Stack

- o A procedure describing the particulate tritium (hydride forms) sampling from the Bldg. 200 stack does not exist. The stack sampling equipment which has been installed for the purpose of detecting potential releases of particulate tritium (hydride forms) is not of an isokinetic design. Although the filter for collecting this particulate is located very close to the sample extraction point, probe design and flow measurement equipment for isokinetic conditions are not provided. These deficiencies can lead to the sample mass not being proportional to the total mass of material (possibly including tritium hydrides) exiting the stack. Failure to properly sample particulate effluent streams can lead to an inaccurate estimate of doses to the public. The site is aware of this situation (I-R-7) and has an approved project budgeted for fiscal year 1990, No. 9082002, to correct this situation.

Failure to adhere to established procedures and design criteria appears to be the cause of the noted deficiencies which may also compromise, in some cases,

data quality and defensibility. In that these data are used in support of public dose assessment, deviations may also compromise compliance requirements.

A/CF-3 Compliance with County and State Air Quality Regulations

PERFORMANCE OBJECTIVE: Pinellas County Ordinance No. 81-21, Section 2.55 1 requires the use of low-solvent paint for the surface coating of miscellaneous metal parts and products. Chapter 17-2.2610 of the Florida Rules and Regulations on air pollution specifies particulate emission limits for sources not subject to emission limitations in other Chapters.

FINDING: Paint and other surface coatings used at the Pinellas Plant for the coating of parts do not meet the County requirement to use surface coatings with low-solvent volatile matter. Also, the Pinellas Plant cannot demonstrate that sources releasing particulate matter are meeting State particulate emission limits.

Use of Low-Solvent Paint

From discussions with GEND staff, it was determined that the County regulation applies to at least four paint spray booths at the Pinellas Plant: The paint spray booth in Area 183H, the spray paint booth in Area 138, the spray booth in Area 110, and the spray paint booth in Area 103. Examination of a number of Material Safety Data Sheets for paints and other surface coatings used in these spray booths indicates that low-solvent paint is not being used. (Information on paint used in the spray booth in Area 103 was not obtained.) There may be other such sources at the Pinellas Plant to which this regulation applies.

The paint spray booth in Area 138 coats weapons parts using surface coatings specified by Sandia-Albuquerque. The responsible supervisor has indicated that this operation will be terminated in the near future (I-A-9). From discussions with staff at Area 110, it was learned that only several ounces of surface coating are used there each day (I-A-23).

The Pinellas County Ordinance specifies that these painting operations would be exempt from the Ordinance if the summed volatile organic compound (VOC) emissions from all these sources are less than or equal to 15 pounds in one day, and 3 pounds in any one hour. However, the Pinellas Plant has not demonstrated that their emissions are less than these levels.

It should be noted that there is at least one other paint spray booth at the plant using high-solvent paint for which this regulation is not applicable (spray booth at Bldg. 700, exempt because it is a refinishing operation). Also, the Maintenance Department and contractors use enamel paint with high solvent content, which is also exempt. About 80 percent of the paint used by the Maintenance Department in 1989 was enamel (I-A-24). Because Pinellas County is in an ozone nonattainment area, and VOCs released from these paints contribute to the formation of ozone, reductions in plant releases of VOCs can be accomplished by greater usage of latex paints and low solvent paints, and would thus constitute best management practice.

Particulate Emission Sources

There are a number of particulate sources at the Pinellas Plant (for example, the Aluminum and Zinc Flame Spray system, various sandblasting machines and ceramic grinding and machining operations, among others) that are subject to Chapter 17.2.2610 of the State regulations. All of the aforementioned operations are vented to pollution control systems, so that emissions are low. However, material balance documentation and calculations or source emission tests to support this are not available. This information should be on file for all sources subject to this regulation and other air quality regulations of the County and State.

The causes of this finding appear to be related to lack of oversight of air quality requirements by Pinellas Plant personnel, and a shortage of experienced personnel.

A/CF-4 Absence of a Meteorological Program

PERFORMANCE OBJECTIVE: DOE Order 5400.1, Chapter IV, Section 6 requires the installation and operation of a meteorological program at DOE facilities by November 9, 1991 to support other environmental monitoring activities.

FINDING: The site has not budgeted for an operating meteorological program that meets the requirements of DOE 5400.1 to be in place by the required date of November 9, 1991.

To meet the requirements of DOE 5400.1, DOE sites will need to have a meteorological tower installed and operating by the required date. Funding had been requested by the Pinellas Plant to install a tower prior to fiscal year 1992; the funding request was deferred (by either the Albuquerque Operations Office or DOE Headquarters) to fiscal year 1992 (I-A-7). The GEND staff have stated that the program will not be operational by November 9, 1991 (I-A-7).

A/CF-5 Kanne Chamber Calibration Inadequacies

PERFORMANCE OBJECTIVE: GEND GOP A.4.02 requires Section Managers to develop and issue instructions for measurement equipment used for monitoring and control of product/non-product processes that assure: 1) calibration or verification prior to use and at established intervals thereafter; 2) identification that precludes use of inaccurate or incorrect equipment; 3) ready and positive identification of calibration status; and 4) recording and reporting of calibration and maintenance data including feedback loop for correction action.

FINDING: Kanne Chambers which are used to monitor tritium stack releases from Bldgs. 100W and 200, and tritium plus krypton stack releases from Bldg. 100E have not all been verified using tritium gas. As of January 19, 1990, the calibrations of only 3 of the 25 Kanne Chambers had been verified using tritium gas, and no schedule exists for when the remaining 22 will be verified (I-R-9). Calibration records for a Kanne Chamber used at Bldg. 800 failed to identify the number of the chamber and the date of calibration. Additionally,

several plotted values were slightly outside of the specified ranges for these three chambers and no feedback was provided.

In that Kanne Chambers provide the first line of defense for detecting out-of-control processes and associated tritium and/or krypton releases from stacks, failure to adhere to established practices appears to be the cause of the noted inadequacies which may also result in inaccurate estimates in public dose.

This finding was also noted in the 1987 Environmental Survey Report.

A/CF-6 Plutonium Stack Sampling Deficiencies

PERFORMANCE OBJECTIVE: Environmental Monitoring Procedure EM-2.01 "Plutonium Stack Releases - Building 400" stipulates a procedure which applies to the collection of particulate plutonium 238 and 239 as well as specifying review frequencies.

FINDING: The stack sampling equipment for Bldg. 400 which has been installed for the purpose of detecting potential releases of particulate Pu-238 and 239 is not of an isokinetic design. The filter for collecting this particulate is more than 15 feet from the sample extraction point and is downstream of numerous abrupt direction changes in the sample line. Additionally, stack gaskets and joints are leaking in both of the exhaust stacks. Furthermore, documentation does not exist verifying that the procedure has been reviewed since November 2, 1987. These deficiencies can lead to the sample mass not being proportional to the total mass of material (possibly including plutonium) exiting the stack.

Failure to properly sample particulate effluent streams can lead to inaccurate estimates of doses to the public. The site is aware of this situation and has an approved project budgeted for fiscal year 1990, No. 9082002 (I-R-16) to correct this situation.

A/CF-7 Vapor Degreasers Management Deficiencies

PERFORMANCE OBJECTIVE: Pinellas County Ordinance No. 79-26, Section 3.5,13 requires that the covers on open-top vapor degreasers be kept closed at all times except when processing workloads, and that a label summarizing the operating procedure specified by the Ordinance be displayed on or near the degreaser.

FINDING: One vapor degreaser that was not being utilized at the time was observed not to have its cover in place. The labels posted on all of the open-top vapor degreasers do not include all operating procedures listed in the Ordinance. The open-top vapor degreaser in the subassembly area (143) was observed by a Tiger Team Assessment member not to have its cover in place. The degreaser had been used earlier in the day, and its cover was set nearby. All other open-top degreasers inspected at the Pinellas Plant (approximately eight) were observed to have their covers in place.

All of the open-top degreasers observed at the Pinellas Plant have covers that are manually removed, except the degreaser in Area 181 which has a roll top that opens and closes in a horizontal plane. Vapor degreasers with roll tops

that open and close in a horizontal motion reduce VOC emissions by preventing disruption of air/vapor boundaries. Rapid removal of a cover will draw VOC vapors out of the degreaser; this is also prohibited by the Pinellas County Ordinance. A staff member from a State agency concerned with waste minimization has recommended that roll tops be installed on all plant open-top degreasers to minimize solvent usage (I-A-12).

All observed degreasers have operating instructions posted, as required by the Pinellas County Ordinance. However, the following information specified by the Ordinance was not in the posted instructions:

- o Repair solvent leaks immediately, or shut down the degreaser.
- o Do not dispose of waste solvent or transfer it to another party, such that greater than 20 percent of the waste solvent (by weight) can evaporate into the atmosphere.
- o Do not operate the cleaner so as to allow water to be visually detectable in solvent exiting the water separator.
- o Do not use ventilation fans near the degreaser opening, nor provide exhaust ventilation exceeding 66 cubic feet per minute per square foot (20 cubic meters per minute per square meter) of degreaser open area, unless necessary to meet Occupational Safety and Health Administration requirements.

All of the open-top degreasers have the VOC controls and safety switches required by the Ordinance. In fact, although the Ordinance requires that only a single control device be installed, the Pinellas Plant degreasers have both refrigerated chillers and a suitable freeboard ratio. Although two GEND staff members remember that all degreasers were examined in the early 1980s to verify that they had the required controls and safety switches, (I-A-12, I-A-13) there is no written documentation available that states this. Also, it was determined that there is no routine maintenance of the safety switches and refrigerated chillers carried out to ensure that they are operating properly.

The cause of this finding appears to be related to knowledge of regulations, and the absence of written documentation.

A/CF-8 Lack of Proper Notification Concerning Fire Training Activities

PERFORMANCE OBJECTIVE: Chapter 17 - 5.090(5) of the State of Florida Rules and Regulations allows open burning for the instruction and training of fire fighters provided that local fire control officers, the State Division of Forestry, and the State Division of Environmental Regulation (FDER) are notified in advance of the time and place of the burning exercise.

FINDING: Fire training activities involving open burning take place at the Pinellas Plant without all of the required notifications of State authorities.

Fire training exercises that involve the open burning of wood pallets with a kerosene torch are carried out about once a month on average. GEND personnel notify the required local fire control officials (the Seminole Fire

Department) prior to each exercise, but the required notifications to the State Division of Forestry and the FDER are not made (I-A-7). Neither the Pinellas Plant nor the FDER had been aware of this problem.

Prior to the final closeout, GEND revised its fire protection procedures ("Quality Program Plan [QPP] for the Fire Protection Program") to allow for the notification of the two State agencies before live burn training (A-16).

The cause of this finding appears to be related to lack of oversight over air quality regulatory requirements.

3.5.1.3 Best Management Practice Findings

A/BMPF-1 Ambient Air Monitoring Deficiencies

PERFORMANCE OBJECTIVE: Radionuclide air samplers should be placed in locations and configurations that would yield consistent, representative results for use in assessing public exposure. Draft DOE Order 5400.xy, page V-18, paragraph 8d(3), provides guidance for acceptable air sampler exposure. The order states, "Unless documented site-specific evidence exists to justify otherwise, the sample(s) at each air sampling station should be collected at a height of 2.0 m above ground level (approximately the height of inhalation for adults), in a location free from unusual localized effects or other conditions (e.g., in proximity to a large building, vehicular traffic) that could result in artificially high or low concentrations." Also, radionuclide air sampling systems should be designed and operated to ensure that valid and defensible samples are being collected.

FINDING: The siting and design of the radionuclide ambient air sampling stations do not provide measurements that are representative of public exposure conditions in the vicinity of the Pinellas Plant. System operational problems observed at certain stations preclude the collection of valid and defensible ambient air quality samples at these locations.

Ambient air monitoring is carried out in the vicinity of the Pinellas Plant to measure air concentrations of tritium and plutonium. All five of the offsite air monitor locations, and all seven onsite locations were visited during the Tiger Team Assessment. None of the air samples were collected at the recommended breathing zone height of 2.0 meters.

The exposure of the air sampling stations was evaluated using the aforementioned exposure guidance in draft DOE 5400.xy, and other relevant standard guidance such as Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987). Based on this evaluation, it was determined that the five offsite samplers are located in the vicinity of buildings or trees which could affect the validity of the data collected. Also, onsite samplers 3 and 4 are located adjacent to a heavily traveled roadway where particulate matter emitted and generated by vehicular traffic could affect collected samples. Although onsite sampler 5 is located at a greater distance from a less heavily traveled roadway, its exposure is marginally unacceptable. Also, vegetation was observed to be growing in the immediate vicinity of the shelter inlet louvers of onsite sampler 1, which could affect the representativeness of the samples.

Other design and operating deficiencies were observed at certain stations that would negate the validity of the collected data:

- o The tritium sampling train at the Walsingham Station was erroneously configured; there was no sampling inlet through which ambient air would be collected.
- o The air sampling rate for two of the plutonium samplers (Clearwater and onsite sampler 5) exceeded the optimal sampling rate, by more than 20 percent, which is outside of the acceptable range specified by draft DOE 5400.xy.
- o The plutonium filter at the Civil Defense station had ruptured. The rupturing of plutonium filters is reported to occur fairly often (I-R-15).

A number of additional monitoring program deficiencies were noted:

- o Because the tritium and plutonium sampling trains exhaust within the shelter housing, sampler exhaust air can be resampled (particularly in layouts observed at a number of Pinellas Plant samplers in which inlet lines are located near exhaust lines). This problem can be reduced by ducting the exhaust air outside of the shelter housing.
- o Although a timer was operating in each sampler to record the total running time between servicings, it would be more appropriate to install a timer on each pump to measure the total running time of each pump.
- o A background air monitoring station for tritium and plutonium has not been set up.
- o A number of the shelter housings had dirt and trash on the shelves, that could contaminate the samples.
- o Although the tritium and plutonium monitoring procedures (EM-1.03 and EM-2.02, respectively) indicate that the offsite monitors are serviced on Thursdays, during the Tiger Team Assessment, they were serviced on Wednesday, January 24. This could lead to inconsistent results based on unequal sampling periods.

The Pinellas Plant air sampling measurements are substantially below U.S. Environmental Protection Agency and DOE radionuclide health criteria (A-18). Therefore, the observed variances from draft DOE 5400.xy air sampling guidance serve to challenge the credibility and defensibility of the measured air concentrations, but not the conclusion that the Pinellas Plant is in compliance with applicable health criteria for the air pathway.

Except for the need for setting up a background station, the site had not been aware of these problems. The cause of this finding is related to the design of the monitoring system, and the availability of staffing resources to address these problems.

A/BMPF-2 High Efficiency Particulate Air Filtration (HEPA) Testing Program

PERFORMANCE OBJECTIVE: ANSI/ASME N510-1980 specifies HEPA testing procedures for exhaust ventilation systems. The Nuclear Air Cleaning Handbook (ERDA 76-21), Section 8.3.5 provides guidance on the frequency of dioctylphthalate (DOP) tests to determine filtration efficiency.

FINDING: HEPA filters in Bldgs. 400 and 200 were not tested with the ANSI/ASME N510-1980 standard. HEPA filters in Bldg. 400 have not been tested at the frequency specified by ERDA 76-21.

An efficiency test using ANSI 101.1-1972 was performed on the HEPA filters (2 in series) in Bldg. 400, and a report was published with satisfactory results on October 19, 1989. The HEPA filter in Bldg. 200 was tested using "Federal Standard 209D for Clean Room and work station requirements, controlled environment." This test indicated an "apparent overall leakage rate of approximately 10 percent." Subsequent efficiency testing using a challenge particle technique is not available. Also, Section 8.3.5 of ERDA 76-21 recommends that DOP tests for contamination areas (e.g., glove-box lines) of laboratories and plants handling moderate-to-large quantities of radioactive materials be conducted semi-annually unless experience indicates that annual testing is sufficient. At the present time most DOE facilities conduct annual operational DOP testing of their HEPA filters. Smoke tests in Bldg. 400 are carried out when HEPA filters are changed out. The latest tests carried out prior to the tests reported on October 19, 1989 were tests reported on June 15, 1987 (I-A-28), an interval of over 2 years. (The available documentation was not clear as to whether tests reported on October 5, 1987 were also for the HEPA filters.)

Additionally, the differential pressure gauge across the filter in Bldg. 200 indicated that the filter was loaded. This gauge is located in a box with a metal door that must be opened to see the gauge indicator. Having the gauge located in such a way may lead to delays of necessary filter servicing or changeout.

Radiological Safety Procedure RTG3 for Bldg. 400 specifies that HEPA filters need to be replaced when the air velocity at the source inspection hood is measured at less than 100 feet per minute. However, the flow has not been checked in the past because of manpower shortages. Also, the written procedure does not accurately reflect the tasks carried out in the changing of the HEPA filters.

In addition, because there are no written procedures for filter changeout or DOP testing for the Bldg. 200 HEPA filter, the Bldg. 400 procedure is being used.

The cause of this finding appears to be related to the lack of personnel resources, and to the absence of written procedures.

A/BMPF-3 Lack of Instrumentation to Verify Scrubber Operation

PERFORMANCE OBJECTIVE: Industry practice provides for instrumentation to verify that pollution control equipment is operating properly.

FINDING: There is no instrumentation in place to ensure process operators that the acid fume scrubbers at the Pinellas Plant are operating properly.

There are five acid fume scrubbers using water as the scrubbing medium on the roof of Bldg. 100 serving the following areas (I-A-32):

- Area 175, Environmental Chemistry Laboratory,
- Area 351, Vacuum Maintenance,
- Area 143, Chemical Clean,
- Area 185, General Chemistry Laboratory, and
- Area 154.

The operators of processes vented to these scrubbers cannot determine whether these scrubbers are functioning properly from readouts in the Pinellas Plant or at the scrubber locations. During a December 1989 inspection by Pinellas County Air Quality Division personnel, a concern was raised on the operating status of three of the scrubbers because no water was visible in the sight glasses on the roof (A-19). Subsequent investigations by GEND indicated that two of the scrubbers were operating properly, but the third was dry and not functioning because of a float valve failure. GEND is investigating the possibility of installing positive indicators of water flow on the scrubbers, with a remote alarm light in the areas of process operation to alarm scrubber failure. Additionally, GEND is reviewing the scrubber preventive maintenance schedules to determine if the frequency of maintenance is adequate (A-19).

The cause of this finding appears to be related to the inadequate design of the scrubber system, and unfamiliarity of site personnel with industry practice.

A/BMPF-4 Absence of an Air Toxic Emissions Inventory

PERFORMANCE OBJECTIVE: Because of growing concern over air toxics and their impact on health, detailed estimates of air toxic emissions from individual processes should be developed.

FINDING: The Pinellas Plant has not carried out a detailed emissions inventory survey of air toxics releases.

This had been an Environmental Survey finding that has not been closed out, although, it was reported to the Albuquerque Operations Office as a closed issue. GEND staff have indicated that they had interpreted this finding as a compliance-related issue, and, after discussions with Pinellas County Air Quality Division staff, determined that there was no regulatory need for developing this inventory (I-A-7). GEND may have planned to proceed with this work, but they are well behind schedule. The implementation plan indicated that the methodology for determining emission rates should have been completed by September 30, 1988 (A-12). A GEND staff member indicated that he was awaiting information from Industrial Hygiene on the identification of air toxic releases from the Pinellas Plant (I-A-7). It should be noted that

plant-wide estimates of the release of a number of toxic pollutants have been developed to comply with SARA 313 requirements.

The cause of this finding is related to inadequate follow-up to audits and reviews, and a lack of personnel resources.

A/BMPF-5 Lack of Silica Gel Tritium "Breakthrough" Documentation

PERFORMANCE OBJECTIVE: Draft (June 15, 1989) DOE Order 5400.xy, Chapter V, 8.e.(2), states that "breakthrough can occur with ... silica gel, and molecular sieves used for ... tritium collection.... The sample exchange frequency for nonparticulate sampling should be determined on a site-specific basis and shall be documented in the environmental surveillance files."

FINDING: Documentation does not exist demonstrating that sample exchange frequency precludes breakthrough on silica gel tritium columns for daily stack, monthly stack, and monthly ambient air tritium samples. Although empirical data including use of indicating silica gel and weight gains generally support that breakthrough is not occurring, a formalized documentation of each sampling train, on a site-specific basis is indicated in the DOE Order.

It should be noted that weekend and holiday daily stack samples are assembled in series to guard against loss of sample by this phenomenon; however, front and back daily columns collected in this manner are not analyzed separately to quantify any such breakthrough. Monthly stack columns are not assembled in series to prevent potential loss.

Failure to document breakthrough conditions including flow rates, total volumes, activity levels, or combinations of all of these, may lead to unwanted loss of sampled material and subsequent underestimation of doses to the public. Limited resource availability and historical comfort with data contribute to the lack of perceived need for this documentation.

A/BMPF-6 Vehicular Fuel Dispensing Requirements

PERFORMANCE OBJECTIVE: 40 CFR Part 80.22 requires gasoline pumping stations to have appropriate signs concerning unleaded and leaded gasoline usage posted.

FINDING: The gasoline pump stand for leaded gasoline at the onsite gasoline filling station does not have the appropriate label as required by 40 CFR 80.22. Also, there is no sign in the vicinity of the gasoline pumps stating the Federal regulation prohibiting the introduction of leaded gas into vehicles requiring unleaded fuel.

The purpose of 40 CFR Part 80.22 is to reduce emissions of lead to the atmosphere by ensuring that gasoline pumps are properly labeled and by making consumers aware of the federal prohibition on the introduction of leaded gas into vehicles requiring unleaded fuel. This regulation applies to storage tanks of at least 550-gallon capacity. The Pinellas Plant tanks are 549-gallon capacity, which makes this a BMP Finding.

The onsite filling station is used for providing fuel to onsite vehicles and generators, not for DOE cars and trucks. The three aboveground storage tanks of unleaded gasoline, leaded gasoline, and diesel fuel are each of 549-gallon capacity. (Tank suppliers in Florida may be marketing this size tank to evade this regulation.) The leaded gasoline pump, which was unmarked, did not have the required sign, "Contains Lead Anti-knock Compounds" posted. The unleaded pump was marked "unleaded"; 40 CFR Part 80.22 states that the label should be "Unleaded Gasoline." Also, there was no sign posted in the vicinity of the pumps stating the Federal prohibition on the introduction of leaded gasoline into a vehicle requiring unleaded fuel; see 40 CFR Part 80.22(d) for the exact wording.

The cause of this finding appears to be related to lack of oversight over air quality requirements by Pinellas Plant personnel.

3.5.2 Soils, Sediment, and Biota

3.5.2.1 Overview

The purpose of the soils, sediment, and biota portion of the Pinellas Plant environmental assessment is to: assess the environmental monitoring program status with respect to these media; to evaluate the potential for and actual contamination of these media by radiological and nonradiological constituents; and to review the monitoring of these media with respect to applicable guidelines and regulations as presented in Table 3.5.2-1.

The soils at the Pinellas Plant consist primarily of the Myakka and Wabasso types. These soils are underlain by sands and shelly sands of Pleistocene age. The depth of the Pleistocene sediments varies in thickness across the site between 25 and 40 feet (SS-5). The unsaturated zone at the Pinellas Plant is extremely thin. Typically, the unsaturated zone is on the order of a few feet in depth below the ground surface and at certain times during the year the saturated zone may extend to the ground surface.

Sediment at the Pinellas Plant occurs principally in the man-made ponds located onsite. These ponds consist of the East, West, and South stormwater retention ponds (SS-1). There are no perennial surface streams. Sediment derived from the site can collect, and has collected in the past, in ditches that convey surface water, stormwater, and wastewater away from the site. This is particularly true at the southwest ditch where treated effluent was discharged between 1957 and 1973 (SS-6).

The Pinellas Plant is located in a pine flatwoods habitat; however, most of the site has been developed or altered from its original habitat type. The site supports, to a limited degree, wildlife with a high tolerance for human contact. In addition the East and West Ponds on the site have been classified as wetlands in the National Wetlands Inventory. They may support a variety of water dependent species (SS-4).

There is only one routine sampling program for soils at the Pinellas Plant. This consists of the yearly sampling of two onsite and four offsite locations. These samples are analyzed for plutonium. Offsite samples are collected at distances of from 2.5 to 3.7 miles from the plant. No routine monitoring takes place for sediment or biota (I-SS-1) (see related Radiation Finding R/CF-1).

Soil samples have also been taken on a nonroutine basis for specific investigations on the site. The majority of these sampling efforts have been carried out as part of contaminant assessments and investigations. The specifics of these investigations and the types of contaminants found in the soil are detailed in the contaminant investigation reports. The Inactive Waste Sites section deals with sites that could have or may have resulted in soil contamination.

Sediment contamination has been documented as part of a study performed by USGS in 1985 (SS-7). Sediments from both the East and West Ponds were sampled and analyzed as part of this effort. Inorganic and organic chemicals were discovered in the sediments. Maximum concentrations of selected inorganic chemicals include: chromium (670 ug/g), mercury (30 ug/g) and lead (340 ug/g).

Seven insecticides and twelve organic priority pollutants were also found in these sediments. Both of the ponds have been included as Solid Waste Management Units (SWMUs) under the draft RCRA permit (SS-8). These ponds and the sediments will be required to be investigated under this permit. The southwest ditch is also included as a SWMU.

Only one finding was developed for this section of the report since most of the soils/sediment/and biota issues are addressed in the other sections.

Table 3.5.2-1 List of Applicable Soils/Sediments/Biota
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
DOE 5400.1	General Environmental Protection Program	DOE
Draft DOE 5400.xy	Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Program	DOE
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	EPA
40 CFR 260-280	Resource Conservation and Recovery Act	EPA

3.5.2.2 Compliance Findings

None

3.5.2.3 Best Management Practice Findings

SS/BMPF-1 Lack of Background Plutonium Soil Sampling Location

PERFORMANCE OBJECTIVE: DOE 5400.xy 10.a, Basis for Sampling Soil, states "Background determinations should be based on soil sampling and analysis corresponding to background (or control) air sampling locations."

FINDING: The site has not established a background plutonium soil sampling location (I-R-16) collocated with a background ambient air monitoring station (see related Finding A/BMPF-1).

As stated in the DOE Order, soil provides an integrating medium that can account for contaminants released to the atmosphere. The DOE Order goes on to state that soil sampling and analyses should be used to evaluate the long-term accumulation trends in order to estimate environmental radionuclide inventories. Although plutonium air releases as a result of site operations has been nondetectable, failure to have such a location could bring into question the validity of facility plutonium sampling results, should there ever be detectable stack releases or detectable soil plutonium results presumed to be from other sources.

Offsite environmental sampling design and lack of staffing resources to initiate implementation of draft orders appear to contribute to this problem.

3.5.3 Surface Water/Drinking Water

3.5.3.1 Overview

The surface water assessment evaluates compliance with regulations promulgated in response to the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA), and includes a review of the adequacy of the wastewater treatment plant and the facility's compliance with the General Pretreatment Regulations. This assessment also includes a review of the Best Management Practices (BMP) and Spill Prevention Control and Countermeasures Plan (SPCC) for protection of surface waters from contamination due to unplanned releases. Surface water discharges at GEND are managed under the Environmental Health & Safety Program (EH&SP). Table 3.5.3-1 lists applicable regulations and requirements used to evaluate the surface water discipline.

Surface water discharges from GEND are regulated by the Pinellas County Sewer System (PCSS) and the Southwest Florida Water Management District (District). Wastewater from plant manufacturing operations and sanitary sewer systems at GEND are discharged to the PCSS and treated at the Cross Bayou Publicly Owned Treatment Works (POTW).

Surface drainage at GEND is influenced by the Pinellas Ridge, which causes surface water to drain to a series of creeks on the east and west sides. Surface drainage is also influenced by the presence of the shallow aquifer and the flow of groundwater. In several areas of the facility groundwater and surface water are contiguous.

Pinellas County provides the Pinellas Plant with potable water. The Pinellas Plant does process deionized water for use in its manufacturing operations. All applicable drinking water requirements are currently being met by the facility.

GEND, prior to 1982, discharged through an NPDES permitted outfall. After 1982 the discharge was directed to the local POTW, Cross Bayou Pollution Control Facility. Prior to that time, wastewater detention was accomplished in two man-made ponds (East Pond and West Pond). Sanitary waste and industrial waste were treated by an extended aeration unit after flow to the West Pond and before discharge from East Pond to the Cross Bayou Canal. The Pinellas County Sewer System (PCSS) is the Control Authority which administers the Pretreatment program for discharges to Publicly Owned Treatment Works (POTW) within Pinellas County. The present wastewater treatment plant at GEND is an elementary neutralization facility which consists of equalization followed by neutralization and mixing of waste from the Pinellas Plant sanitary, industrial metal finishing and associated chemical waste and wastewater containing low-level tritium water from decontamination activities at the facility. The industrial waste is treated by the elementary Waste Water Neutralization Unit (WWNU) and is combined with the sanitary waste prior to its discharge to the POTW. The low-level contaminated tritium waste is collected from Health Physics (HP) drains and dedicated piping within the facility and pumped to HP holding tanks where the wastewater is tested to determine tritium concentrations. The facility discharges industrial (Metal Finishing), sanitary, and low-level radioactive wastewaters to the POTW.

GEND has three man-made ponds which serve as retention and final containment basins for spills. The East and West Ponds were used to detain the Pinellas Plant process wastewater prior to 1982 when the Pinellas Plant discharged under the National Pollutant Discharge Elimination System (NPDES). Presently, the East and West Ponds function as stormwater retention basins. The South Pond is a retention basin constructed in 1985, added to increase stormwater retention capacity as a result of the Pinellas Plant expansion. The South Pond collects stormwater runoff from the southeast and southwest drainage ditches and flows southerly into the Cross Bayou Canal, which leads to Cross Bayou and finally to Boca Ciega Bay. The East Pond discharges to the Pinellas County municipal separate stormwater system. Discharges from the South Pond are managed by the Southwest Florida Water Management District.

GEND does not presently have a BMP Plan for the Pinellas Plant and is not required to by their industrial discharge permit. GEND does have an SPCC Plan which complies with 40 CFR 112, Oil Pollution Prevention. However, the plan has not been reviewed by personnel in areas of the Pinellas Plant where compliance is required. The SPCC plan is deficient in the areas of personnel training; specifically lacking proper spill prevention procedures and spill prevention briefings for their operating personnel at intervals enough to assure adequate understanding of the SPCC Plan.

After review of GEND's compliance with the CWA, SDWA, General Pretreatment regulations and BMP/SPCC there are 12 findings. Six are compliance findings, six are best management findings. Most of the findings are as a result of lack of oversight from EH&SP. Most serious are those findings which were noted in the Environmental Survey in 1987 and not corrected by the Pinellas Plant. Also, the Pinellas Plant has not adequately followed the changes in Federal regulations for stormwater discharges.

Table 3.5.3-1
List of Applicable Surface Water
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Title</u>	<u>Authority</u>
40 CFR Part 112	Oil Pollution Prevention	EPA
40 CFR Part 122/123/125	National Pollutant Discharge Elimination System	EPA
40 CFR Part 130/13	Water Quality Planning and Management	EPA
40 CFR Part 136	Test Procedures for the Analysis of Pollutants	EPA
40 CFR Part 141/142	National Primary Drinking Water Regulations	EPA
40 CFR Part 143	National Secondary Drinking Water Regulations	EPA
40 CFR 403	General Pretreatment Regulations	EPA
Florida Statute, Title 17, 17-6	Florida Wastewater Facilities Regulations	FDER
Florida Statute, Title 28 Chapter 376	Pollutant Discharge Prevention and Removal	FDER
Florida Statute, Title 29 Chapter 67-436	Pollution Control	FDER
Florida Statute, Title 17 17-3	Water Quality Chapter Standards	FDER
Pinellas County Charter, Chapter 80-590, Ordinance 88-4	Sewer Use Ordinance	Pinellas County
Florida Statutes, Chapter 373, Southwest Florida Water Management District, Chapter 40D-4	Surface Water Management System Permits	FDER
Draft DOE 5400.xy	Radiological Effluent Monitoring and Environmental Surveillance	DOE

Table 3.5.3-1 (Continued)

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Title</u>	<u>Authority</u>
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5484.1	Environmental Protection, Safety and Health Protection Information Reporting Requirements	DOE

3.5.3.2 Compliance Findings

SW/CF-1 Failure to Comply with Reporting Requirements Under Pretreatment Regulations

PERFORMANCE OBJECTIVE: The Plant is required under General Pretreatment Guidelines, 40 CFR 403.12(b); DOE Order 5484.1, Chapter III, 4., b., 2; and Section E, 7, Pinellas County Sewer System (PCSS) Permit No. 018-IE; to report all data if the permittee monitors any pollutants more frequently than is required by a regulatory authority.

FINDING: GEND personnel in the General Chemistry Laboratory where metal analyses are conducted for wastewater discharged to the POTW, have not been reporting all of the data to EH&SP. In turn, the Pinellas Plant has not been reporting all data to the PCSS.

As part of an internal laboratory program to obtain State certification, laboratory personnel have requested through Utility Operations Group that metals samples required under the Pinellas Plant's discharge permit be collected by utility operators at a frequency of weekly rather than the discharge permit requirement of monthly (SW-41). The increased number of samples allows the laboratory to perform the validation test with a larger sample pool.

Laboratory personnel perform the analysis on a weekly basis but report the results from only one monthly sample to EH&SP which, in turn, is used to complete the required discharge monitoring reports. Beginning with the month of November 1989, laboratory personnel selected the second weekly sample taken in a given month to report to EH&SP. EH&SP apparently had no knowledge that additional samples were being taken by the utility operators, nor was the Control Authority for the local POTW aware of the increased frequency of sampling and analysis.

Review of the data reported to the PCSS during November 1989 to January 1990 (SW-42) revealed that the selection of the second weekly sample was not concentration-based as a determining factor in the selection of which sample was reported for a given month. Since laboratory personnel were consistent in their sample selection and the first weekly sample was well below the permit levels, no apparent concentration-based selection criteria is evident.

When made aware of this deficiency, the Pinellas Plant corrected its internal reporting procedures and laboratory personnel are now reporting the data to EH&SP. Also, the data not immediately reported to PCSS did not have any values above the permit limit.

Laboratory personnel are not receiving adequate oversight from EH&SP. EH&SP has inadequate control procedures to assure that all laboratory personnel have a clear understanding of the regulatory requirements on which data quality objectives should be based.

SW/CF-2 Industrial Discharge Permit Exceedances and Design Deficiencies at the Waste Water Neutralization Unit (WWNU)

PERFORMANCE OBJECTIVE: As described in 40 CFR Part 403 and under the facility's Industrial Discharge Permit, Pinellas County Sewer System (PCSS), Permit No. 018-IE, the Plant is required to comply with the limitations and standards established in its discharge permit.

FINDING: The Pinellas Plant has had two exceedances of the industrial discharge permit in the past 3 months. The exceedances were of pH local daily maximum and minimum discharge standards of 9.5 and 5.5 standard units, respectively.

On October 22, 1989 an exceedance of pH discharge limits occurred when an estimated 1,800 gallons of combined effluent waste water with a pH of 5.2 was discharged for 6 minutes from the WWNU (SW-45).

On January 3, 1990 at 1:30 p.m. and for a period of 5 minutes, the Pinellas Plant discharged an estimated 1,200 gallons of wastewater to the POTW (SW-43, SW-44). The wastewater discharged had a maximum pH of 11.4 which exceeds the PCSS discharge maximum of 9.5.

The 1987 Environmental Survey had a finding on the process related problems at the WWNU. Specifically, the finding cited inadequate placement of the pH sensor probes in the neutralization tank as a significant source of operational problems at the WWNU. The WWNU pH sensors remain inappropriately placed within the neutralization tank. The process control of the WWNU is poor and inadequate for handling slug flows and inadequate for operating in an automatic and continuous manner. The pH excursions highlight the problems associated with inadequate process design controls.

The facility reported in two exceedance incident reports to both the County and the PAO the background of the non-compliant discharges and provided possible explanations for each incident. The Pinellas Plant stated that procedures governing unusual releases to the neutralization unit will be changed to prevent system overloading. The Pinellas Plant has discontinued automatic neutralization and is only releasing in batch mode the wastewater to the POTW after final pH testing in the inground (aeration) holding tanks. The site has planned corrective action for the noncompliant discharges.

The inadequate process design of the WWNU and the inappropriate placement of control sensors has led to operational problems. The Pinellas Plant has failed to address the process related findings from the 1987 Environmental Survey and had not implemented effective oversight of the WWNU.

Poor design and the lack of personnel trained in the operation of wastewater treatment plants, and the lack of staffing to provide EH&SP oversight, were determined to be the causes of this finding.

SW/CF-3 Inadequate QA/QC of Wastewater Sampling and Sampling Procedures

PERFORMANCE OBJECTIVE: As described under 40 CFR 403.12 (b) (5) (vi), Sampling and Analysis, and under the facility's Industrial Discharge Permit, Pinellas County Sewer System (PCSS), Permit No. 018-IE, Section E (4), the

Plant is required to perform sampling and analysis in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. Sampling and analysis shall be performed by using validated analytical methods or any other applicable sampling and analytical procedures including procedures suggested by the POTW.

FINDING: Wastewater samples collected by the Pinellas Plant for compliance with its industrial discharge permit do not have adequate Quality Assurance/Quality Control in the areas of Chain-of-Custody, sample identification and sampling techniques.

EH&SP is mandated in Environmental Monitoring Procedure (EMP) EM-7.01 Section (SW-11) to have primary responsibility of maintaining QA/QC associated with environmental monitoring at the Pinellas Plant. This responsibility extends to all environmental samples collected at the plant. The plant has outlined in its EMPs specific requirements for Chain-of-Custody, the control of sampling locations, sampling methods and sampling frequencies.

EH&SP personnel have not reviewed the activities defined within the EMPs for adequacy and accuracy on a regular basis. More specifically, oversight and review is lacking in the following areas:

- o The Pinellas Plant has not conducted routine audits of sampling techniques employed by the utility operators who collect the wastewater samples; nor has the responsible EH&SP manager observed the sampling techniques of the utility operators to determine whether the Pinellas Plant is collecting samples in the manner required in its discharge permit.
- o The Pinellas Plant has not audited the laboratory which performs the analyses.
- o Management at EH&SP has not reviewed the Pinellas Plant's most recent procedures for analysis of metals as required under the discharge permit (SW-46). The GEND General Chemistry Laboratory Methods CHM 8430, Procedure for Determination of Chromium Content in POTW Industrial and Combined Effluents, has not been reviewed by EH&SP personnel, even though the method has been used since September 1989.
- o The utility operator left samples unattended and the samples were not in the utility operator's view, thus breaking the Chain-of-Custody for the samples.
- o Chain-of-Custody was not maintained in the laboratory for samples collected for the Pinellas Plant's discharge permit. The Pinellas Plant conducts its sample analysis in two separate areas. Metals analyses are conducted in the General Chemistry Laboratory and tritium and biological analyses are conducted in the Environmental Chemistry Laboratory. The utility operator takes all wastewater samples to the Environmental Chemistry Laboratory where laboratory personnel sign for custody of the samples; however, later the samples which require metals analysis are relinquished to the

personnel in the General Chemistry Laboratory without the appropriate Chain-of-Custody documentation.

- o EH&SP personnel have sent formal chemical analysis service requests to the General and Environmental Chemistry laboratories requesting that wastewater samples collected under the Plant's industrial discharge permit be analyzed using an inappropriate analytical method. The laboratory, however, has ignored the method specified in the request, and has conducted the analysis by the method designated in 40 CFR 136.

The site was not aware of any of the deficiencies noted in this finding. The consequences of these deficiencies could have a significant effect on the validity and defensibility of wastewater sampling data. Effective adherence to existing QA/QC policies at the Pinellas Plant would ensure adequate validity and defensibility of data reported.

The cause of this finding appears to be lack of staffing resources in that EH&SP has not provided the necessary oversight of the Environmental Monitoring Program at the facility as it relates to the collection and analysis of wastewater samples.

SW/CF-4 Potential Discharge of Radionuclides to Chemical Drain Systems

PERFORMANCE OBJECTIVE: Pinellas County Sewer System (PCSS), Sewer Use Ordinance, 88-4 Section 5., Prohibitions and Limitations on discharge into the Pinellas County Sewer System, Section 5 (a) (4), prohibits the discharge of radioactive waste or isotopes with concentrations which may exceed limits established by regulation within the Florida Administrative Code.

FINDING: The Pinellas Plant has a potential for the discharge of contaminated radioactive waste from the "vapor blaster" operation in Area 112 through drains not designated to receive radioactive waste. The wastewater from the vapor blaster may exceed limits established by regulation within the Florida Administrative Code.

Wastewaters generated from vapor blaster operations in Area 112 and 138, which could be contaminated with tritium, are released to the chemical drain which discharges to the POTW via the WWNU. All other known sources of potentially contaminated wastewater are discharged through the Health Physics (HP) drain system and monitored prior to disposal.

An EH&SP policy concerning the discharge of potentially contaminated wastewater to drains does not exist.

This finding was identified in the 1987 DOE Environmental Survey and continues to be a problem at the Pinellas Plant. Since that time the Pinellas Plant has re-routed other drains which received "vapor blaster" waste to the HP drains as part of a drain replacement and re-routing program. The Pinellas Plant will soon complete engineering studies for rerouting all vapor blaster wastewater to the HP drains system. However, the Pinellas Plant failed to include the chemical drains in Areas 138 and 112 in the HP drains system in their initial drain study.

Since the Pinellas Plant was made aware of this deficiency 2 years ago, it appears that inadequate follow-up and planning were both contributing factors to this finding.

SW/CF-5 Inconsistent Environmental Monitoring Procedures for Tritium in Surface Water

PERFORMANCE OBJECTIVE: GEND Environmental Monitoring Procedure, EM-4.01, Tritium in On-site Surface Waters, Revision No. 2.0, and EM-4.02, Tritium in Off-Site Surface Waters, Revision No. 4.0, which describe the procedures for collection of onsite and off-site surface water samples for tritium analysis.

FINDING: The Pinellas Plant has inconsistent Environmental Monitoring Procedures for the collection of onsite and offsite surface waters for tritium analysis.

Both procedures, EM-4.01 and 4.02, apply to the collection of surface water samples for tritium analysis. Each procedure states that any deviation from its provisions must be approved by EH&SP. Each procedure further states that the procedures should be reviewed annually to assure accuracy. The last documented revision date of EM-4.01 was November 2, 1987. The last documented revision date of EM-4.02 was July 20, 1988.

The onsite sampling procedure (EM-4.01) is generic and does not provide the sample technician with enough instructions to implement the procedure. However, the offsite sampling procedure (EM-4.02) is more specific and provides adequate instruction for the acquisition of samples in a consistent manner.

Field observations of wastewater sampling revealed the effect of inadequate guidance and the lack of specific, documented sampling procedures (SW-47, SW-48). EM-4.02 requires the sampler to twice submerge a sampling dipper prior to collecting the offsite sample on the third retrieval of water. However, the sample technician collected onsite samples without twice submerging the sample container. EM-4.01 does not require that the sampling dipper to be submerged twice prior to sampling. The sample technician observed conducting onsite tritium wastewater samples did not submerge the sampling dipper twice. Inconsistent sampling procedures can affect the validity of the data used for comparison of onsite tritium levels with that of offsite tritium levels.

This finding appears to be as a result of ineffective oversight by EH&SP management. Further, the inconsistencies in the water sampling techniques suggest that EH&SP management have in the past, placed a low priority on QA/QC of documents.

SW/CF-6 Deficiencies in SPCC Plan

PERFORMANCE OBJECTIVE: As described in 40 CFR Part 112, Oil Pollution Prevention, Florida Pollutant Spill Control Act, State Statute 376.30; and 40 CFR Part 109, Criteria for Oil Removal Contingency Plans; and DOE Order 5480.4; and GEND SPCC Plan, August 1988; Section A.4., the Plant should have a qualified person attend the unloading of the diesel fuel in accordance with 49 CFR Part 177 and the SPCC plan should be fully implemented by the Plant.

FINDING: The Pinellas Plant does not have a qualified person attend the unloading of diesel fuel in accordance with 49 CFR Part 177. Also, the Pinellas Plant's SPCC plan has not been fully implemented and is deficient in the area of personnel training.

The intent of 40 CFR 112, Oil Pollution Prevention, is to provide oversight and guidance to facilities which transport, store, process, refine or consume oil products on ways to minimize spills associated with those operations. The Spill Prevention Control and Countermeasures Plan (SPCC), prepared by the site in 1988 as required under 40 CFR Part 112 was prepared by personnel in EH&SP, and is intended to satisfy the oil pollution prevention plan requirements of that regulation. This Plan requires that a qualified person attend the unloading of the diesel fuel in accordance with 49 CFR Part 177, which is currently not being done.

Under 40 CFR 112, the Pinellas Plant is required to have secondary containment for fuel and waste storage areas. There is no secondary containment for the temporary drum storage area near Bldg. 200. Also, the Pinellas Plant is not providing personnel training, including spill prevention briefings at intervals, frequently enough to assure adequate understanding of the SPCC Plan. The Pinellas Plant does not have adequate briefing for personnel in areas with the greatest potential for spills. Moreover, plant personnel in those areas are required by the regulation to be familiar with the plan. None of the eleven distributed copies of the SPCC Plan were sent to personnel in the Fire Pump House, or the Gasoline and Oil Fueling Station areas.

This finding is a result of failure to implement established procedures because of resource constraints resulting in the lack of personnel training.

3.5.3.3 Best Management Practice Findings

SW/BMPF-1 Unacceptable Risk of Bypassing Pretreatment System

PERFORMANCE OBJECTIVE: The facility should minimize the risk of violating General Pretreatment Regulations, 40 CFR 403.17, (d), (1) which prohibits the bypass of any portion of an Industrial User's treatment unit.

FINDING: Potential bypass of the Pinellas Plant's Wastewater Neutralization Unit (WWNU) by laboratory chemicals used in the WWNU sampler control building.

The WWNU is required under its industrial discharge permit to monitor waste streams from plant operations that are directed to the WWNU for pretreatment prior to discharge to the PCSS. There are three waste streams: sanitary, industrial, and combined (sanitary and industrial) which are routinely sampled to meet the requirements in the Pinellas Plant's discharge permit. The sanitary waste stream is not pretreated and is combined with the treated industrial waste and discharged to the PCSS.

Sampler Control Bldg. 550 contains samplers which collect flow-proportioned samples of the three waste streams. The building also contains a small laboratory bench area and sink. The utility operators perform pH analysis and prepare bottles for sample collection. The Operating Instructions (OI) of the

utility operators require that the empty sample bottles be cleaned with laboratory grade soap, rinsed with water and then treated with 1:1 nitric acid.

Observations of utility operators in completing the OI associated with bottle preparation revealed that the acid was poured into the sampler composite bottle over the sink. Further review of plant drawings revealed that any acid allowed to go down the drain during the nitric acid rinse would result in the discharge of the acid to the sanitary wastestream which bypasses the WWNU.

This finding highlights inadequate drain system design in Bldg. 550. The lack of internal review and audits necessary to eliminate potential bypasses of the industrial treatment unit was the cause of this finding.

SW/BMPF-2 Inadequate Procedure for Determining Toxic Discharge to the Waste Water Neutralization Unit (WWNU)

PERFORMANCE OBJECTIVE: Pinellas County Sewer System (PCSS) Sewer Use Ordinance, 88-4, Section 5.(a)(1), prohibits the discharge into the PCSS, or any connected system, of waste waters containing toxic substances.

FINDING: The use of total conductivity to determine whether potentially toxic wastewater is discharged from the Bldg. 600 chemical sumps to the PCSS is inadequate and can subject the Pinellas Plant to exceedances of prescribed discharge limits.

The Bldg. 600 chemical spill sumps receive rainwater and groundwater infiltration. The site manages the accumulation of stormwater and groundwater infiltration into the sumps by either disposing of the waste as a hazardous liquid or by discharge to the WWNU and ultimately to the local POTW. When the tanks are 50 percent full, total conductivity and pH are measured; and, if the total conductivity is below 1200 micromhos, then the waste is discharged to the WWNU, if not, then an EP Toxicity analysis is conducted. If the result of the EP Toxicity analysis confirms the waste as nonhazardous, then the waste is discharged to the WWNU.

The Pinellas Plant was made aware of the deficiency inherent in this procedure by the 1987 Environmental Survey Team.

Failure of the GEND to control the discharge of toxics to the WWNU may cause the plant to exceed its discharge permit line and the Pinellas County Sewer System (PCSS) Sewer Use Ordinance, 88-4, Section 5.(a), (1) which prohibits the discharge into the PCSS or any connected system of waste waters containing toxic substances.

This finding appears to be a result of insufficient follow-up and inadequate risk assessment.

SW/BMPF-3 Stormwater Discharge Permits Have Not Been Adequately Addressed

PERFORMANCE OBJECTIVE: Section 405 of the Water Quality Act of 1987 (WQA) added Section 402 (p) of the Clean Water Act (CWA) to establish NPDES permit applications requirements for stormwater discharges associated with industrial

activity. WQA mandated that NPDES applications for stormwater discharges associated with industrial activity be submitted by February 4, 1990.

FINDING: GEND has not adequately addressed stormwater issues associated with the management of potential emergency discharges from South Retention Pond. The Pinellas Plant has not prepared a Stormwater Discharge Permit Application for the South Pond.

All stormwater runoff from the Pinellas Plant drains to either the East, West, or South stormwater retention ponds or to a drainage ditch on the southwest corner of the property. Any release from the South Pond would discharge through the southwest drainage ditch and flow into the Cross Bayou Canal, which leads to Cross Bayou and finally to Boca Ciega Bay. If there was a spill of significant proportions to the East Pond, water from the East Pond could be diverted to the South Pond. The East Pond discharges through Canal A to the County municipal storm sewer. However, no diversions have occurred to date.

Section 405 of the Water Quality Act of 1987 (WQA) added Section 402(p) of the Clean Water Act (CWA) to establish NPDES permit applications requirements for stormwater discharges associated with industrial activity. The Pinellas Plant has not prepared a permit application.

The issue of whether the Pinellas Plant would require a stormwater discharge permit has been discussed in correspondence among several parties associated with the management of the Pinellas Plant including the PAO, GEND staff and EH-231. The results of the correspondence and analysis are that the Pinellas Plant will not require a stormwater discharge permit because of the EPA approach of permitting municipal control authorities which manage local watersheds and stormwater basins.

The site made a determination in March 1989 that it will not be required to file an individual stormwater discharge permit application. Further, PAO received assurance from Pinellas County that the County would apply for a permit for Canal A (a Pinellas County designation) to which the plant discharges. The South Pond, however, does not discharge through Canal A. Therefore, the South Pond discharges may require the site to obtain a permit.

Discussions with EPA contractor personnel for the Stormwater regulations pursuant to the WQA advise of a probable July 1990 promulgation date. WQA mandated that NPDES applications for stormwater discharges associated with industrial activity be submitted by February 4, 1990. If the Pinellas Plant does not file an application prior to February 4, 1990 for the discharge from South Pond, which is not connected to the Pinellas County municipal separate storm sewer, it risks non-compliance with the regulation.

This finding appears to be a result of potential inadequate regulatory assessment associated with stormwater management at the site.

SW/BMPF-4 Incomplete Inventory of Facility Drains

PERFORMANCE OBJECTIVE: The Plant should minimize the risk of violating Section 5.(a), (1) of the Pinellas County Sewer System (PCSS) Sewer Use Ordinance, 88-4 which prohibits the discharge into the PCSS or any connected

system discharges containing toxic substances by maintaining a complete inventory of all drains at the Plant and providing oversight of waste discharged through all drains.

FINDING: GEND does not have a complete inventory of all drains at the Pinellas Plant and therefore cannot provide total oversight for the discharge of waste liquids.

Failure of GEND to determine the locations of drains at the Pinellas Plant limits its ability to provide oversight of the discharges from the plant and thus an inadvertent discharge of toxic chemicals to the POTW via the WWNU may cause the Pinellas Plant to exceed its discharge permit limits (SW-7).

In Area 117, a floor drain located in the middle of the Area was missed for marking during a recent drain inventory (SW-50). However, the majority of the drains at the Pinellas Plant are marked as a result of a program implemented by Facility Engineering.

This finding appears to be caused by human factors. EH&SP has not utilized internal resources available to determine the location of the drains at the Pinellas Plant. Facility Engineering has not provided EH&SP with the available data on the "as is" status of the plant, even though Facilities Engineering personnel stated that the plant drawings, including drain locations, are updated semi-annually.

SW/BMPF-5 Unacceptable Risk from a Deactivated High Level Alarm

PERFORMANCE OBJECTIVE: The Plant should minimize the effects of unplanned release on water quality as described in DOE Order 5400.1, Environmental Monitoring Requirements.

FINDING: The Pinellas Plant has decreased the controls available to monitor and control the unplanned release of wastewater potentially contaminated with tritium.

The high level indicator at the lift station which pumps waste to the Health Physics (HP) tank has a deactivated audible alarm. The alarm remains disengaged at the instructions of EH&SP management due to repeated complaints from neighboring residents (SW-49). The lift station is located on the south side of the Pinellas Plant just west of the South Pond near an employee parking area and a culvert which leads to the Cross Bayou Canal.

The high level alarm is a standard "float-type" designed to actuate the alarm at a set water level. Standard industry practice is to include high level indicator floats or other such devices to prevent overflow from the containment vessel in the event of a pump failure or other such unusual occurrences which could cause the level in the lift station wet well to rise rapidly.

The deactivation of the alarm negates the ability of personnel near the lift station to respond rapidly to an overflow of the lift station if they were within the range of the audible alarm. The Health Physics lift station wet well water level can also be monitored from the control room in Bldg. 500, which is on the north side of the plant. Any overflow from the HP lift

station could flow to the nearby culvert or employee parking area. Other lift stations at the facility were inspected and found to have audible alarms activated.

The cause of this finding is lack of management oversight to find a solution to the situation and effect a satisfactory resolution.

SW/BMPF-6 Inadequate Training of Wastewater Treatment Plant Operators

PERFORMANCE OBJECTIVE: The intent of the State statute which certifies operators is to ensure that the public has the minimum risk associated with the discharge of wastewater from a treatment plant. The statute, however, does not require operators of industrial wastewater treatment plants to be State certified.

FINDING: GEND has not adequately trained its existing wastewater treatment plant operators, nor has it replaced the certified operators which have left as a result of retirement. Current operators of the Pinellas Plant's wastewater treatment plant are not certified.

GEND cannot demonstrate that the operators of the Wastewater Treatment Plant have at least the necessary level of competency in the operation of the unit. Without personnel with the of expertise necessary to ensure consistent plant operation, compliance with its industrial discharge permit could be affected. None of the utility operators at the plant are currently certified by the State of Florida to operate a wastewater treatment plant. Historically, the Pinellas Plant has had at least one utility operator or shift foreman who held a State certification. These individuals provided the plant with expertise needed to ensure efficient operation of the treatment plant.

The Pinellas Plant presently is operated by the Utility Operations Group. The utility operators must function as wastewater sampling technicians on the site along with conducting preventive maintenance functions for plant ancillary equipment. Presently, the utility operators rely on the technical staff for process related guidance. With the present staff limitations at the plant it is increasing unlikely that technical guidance will be available to operators in a timely manner.

GEND has not adequately assessed the risk associated with not training utility operators in the operation of the WWNU.

3.5.4 Groundwater

3.5.4.1 Overview

The purpose of the environmental assessment of groundwater at the Pinellas Plant was to evaluate both the programmatic and technical status of groundwater protection and monitoring as it relates to applicable regulations, industry guidance, and best management practices. Applicable regulations include the requirements of DOE Orders, RCRA and CERCLA/SARA as presented in Table 3.5.4-1. Industry guidance includes publications developed as part of both the RCRA and CERCLA programs by EPA and best management practices are those practices which are current in industry and government programs.

The sediments which underlie the Pinellas Plant are generally divided into three hydrogeologic units:

- 1) The surficial aquifer, which is on the order of 25 to 40 feet thick,
- 2) The Hawthorne Formation, which is on the order of 50 to 100 feet thick and can act as an aquitard, and
- 3) The Upper Floridian aquifer, which can be many thousands of feet thick and is a major source of water supply in the region.

Current information developed on the site indicates that the surficial aquifer and its relationships with surface water bodies, the Upper Floridian aquifer, and/or other geologic features (such as relict sinkholes) is not well understood except in specific inactive waste site areas. Even in those areas where study has occurred, such as at the 4.5-Acre Site, the actual flow relationships are not fully understood on a seasonal basis. In fact, the vertical relationship between the surficial aquifer and the "deep" aquifer (Upper Floridian) has not been characterized.

On a localized basis, the surficial aquifer has been estimated to generally flow radially away from the site in all directions with an interpreted groundwater high occurring at the West Pond. The study which detailed this interpretation was performed by USGS in 1988, but did not provide enough site specific details in order to define flow relationships (GW-16, contained in GW-17 and I-GW-9). The relationship between the surficial aquifer and the deep aquifer has only been investigated as part of a contaminant assessment of the Northeast Site (GW-5). It is thought, based on this study, that the Hawthorne Formation in this area of the site acts as an aquitard and has prevented or minimized the downward migration of contaminants. However, significant downward vertical gradients are present between the surficial aquifer and the deeper, Upper Floridian aquifer at this site. It is presumed that this downward gradient is present throughout the Pinellas Plant and nearby areas (GW-5). In addition, it is not known whether the three deep wells installed at the Northeast Site actually penetrated into the Upper Floridian or only penetrated the Hawthorne Formation. Regional data suggest that the flow direction in the deeper aquifer is toward the northeast or east.

Groundwater is frequently used in the vicinity of the site. A 1987 inventory of wells in the vicinity of the Pinellas Plant indicated that there were approximately 240 wells within a 1 to 2 mile radius of the site. These wells

did not require a Consumptive Use Permit (CUP) from the Southwest Florida Water Management District (SWFWMD) (GW-5). A CUP is required for wells that are 6 inches in diameter or greater and withdraw groundwater at a rate in excess of 100,000 gallons per day (GW-5). Twenty-two wells requiring a CUP were reported in 1984 to be generally located south of the plant (GW-9). Only the wells which required a CUP have been located in relation to the plant. The remaining 240 wells have only been located on a gross basis; their exact locations are unknown. Depths of all these wells were reported to range from 65 to 285 feet. The majority of wells were reported to be between 90 and 250 feet in depth. Based on these data the wells typically withdraw groundwater from either the Hawthorne Formation or the Floridian aquifer.

There is no routine monitoring of groundwater at the Pinellas Plant. The last routine monitoring took place from 1972 to 1982 and was associated with the spray irrigation of facility wastewaters. The current groundwater monitoring at the Pinellas Plant is carried out through individual contaminant investigations. The primary areas of study have been at two groundwater contamination sites. These are the 4.5-Acre and Northeast Sites. Both the 4.5-Acre and Northeast Sites have been found to contain primarily organic contamination in the groundwater. Levels of organic chemical constituents at one well have been as high as 4,100,000 parts per billion (ppb) of methylene chloride in the groundwater at the Northeast Site and as high as 3,000,000 ppb of methylene chloride at the 4.5-Acre Site. A consultant report on the Northeast Site in 1988 stated that "Organic and inorganic contaminant levels for some constituents detected in the area do exceed the water quality criteria for Class II groundwater established by FDER in 17-3.404, F.A.C."

In summary, groundwater protection and monitoring at the Pinellas Plant does not meet certain compliance and best management practice requirements. Groundwater has become contaminated, principally at two sites, with organic chemicals that exceed applicable Florida standards. A well installed in the Upper Floridan aquifer in 1957 is believed to have been capped and not properly closed in accordance with Florida regulations. The exact location of the well is unknown for it is located under Bldg. 100. Other shallow wells have been left unused and not properly abandoned, even though the State does not currently require proper abandonment of these wells. A new State regulation is anticipated in March 1990 that will require the abandonment of these wells. There is no formal routine groundwater monitoring or well maintenance program at the Pinellas Plant. Characterization of the hydrogeologic regime has not been adequately addressed over most of the site.

The findings that follow this overview detail the specific aspects of the Pinellas Plant's groundwater monitoring and characterization that do not meet compliance and best management practice requirements. The reader is also referred to the Inactive Waste Sites section of this report for parallel findings with regard to site characterization and contaminant source information.

Table 3.5.4-1
List of Applicable Groundwater
Regulations/Requirements/Guidelines

<u>Regulation/ Requirement/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
Rule 17-3.401-406, F.A.C.	Water Quality Criteria Groundwater	FDER
Rule 17-22.104 F.A.C.	Florida Primary & Secondary Drinking Water Standards	FDER
Rule 40D-3.021 and 3.701	Water Wells & Well Construction Stds.	SWFWMD
Rule 17-532.440	Abandonment of Wells	FDER
DOE 5400.1	General Environmental Protection Program	DOE
40 CFR 141 & 143	Primary & Secondary Drinking Water Stds.	EPA
	Florida Groundwater Guidance Concentrations	FDER
	RCRA Groundwater Monitoring Technical Enforcement Guidance Document	EPA
	Guidance for Conducting RI/FS Under CERCLA	EPA
	Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites	EPA

3.5.4.2 Compliance Findings

GW/CF-1 Groundwater Contamination

PERFORMANCE OBJECTIVE: Florida Rule 17-3.404 F.A.C. (GW-6) establishes standards for Class G-I and G-II groundwater. These standards are contained in Rule 17-22.104 F.A.C. and are primary and secondary drinking water quality standards. These standards include both inorganic and organic chemicals and are similar to the constituents and standards set forth in 40 CFR Part 141 Subparts B and G. Florida Rule 17-3.402 F.A.C. establishes Minimum Criteria for groundwater and the "Florida Ground Water Guidance Concentrations" (GW-8) provides groundwater quality data for the Minimum Criteria requirements.

FINDING: Chemical constituents in groundwater, primarily resulting from contaminants disposed of at both the 4.5-Acre Site and the Northeast Site, have exceeded applicable standards and guidelines established by the State of Florida.

The Pinellas Plant has discovered two principal groundwater contaminant plumes associated with two past disposal sites. These sites are the 4.5-Acre Site and the Northeast Site (GW-3, 4, 5, 12, and 13). The primary chemical constituents of these plumes are organic chemicals, but inorganic chemicals are also present. A summary of the major contaminants and related concentrations for each site is presented below.

4.5-Acre Site

Groundwater investigations at the 4.5-Acre Site (GW-12 and 13) indicate that both standards and guidelines set forth in the Florida groundwater regulations (GW-6 and 8) have been exceeded for at least nine constituents. Examples of the constituents detected, the maximum level reported, the well number, and the applicable standard are shown in Table 3.5.4.2-1.

As can be seen from the table, four constituents have exceeded applicable standards and five have exceeded applicable guidelines. Up to seven wells have exceeded the vinyl chloride standard in one sampling event (GW-13).

Table 3.5.4.2-1
4-5 Acre Site Ground Contamination

<u>Constituent</u>	<u>Monitoring Well Maximum Concentration (ppb)</u>	<u>Well No.</u>	<u>Applicable Standard (ppb)</u>
Methylene Chloride	3,000,000	RW4	5 ^a
Benzene	502	MW-2	1 ^b
Ethylbenzene	34	MW-2	2 ^a
Lead	60	MW-14	50 ^b
Trichloroethylene	320,000	RW4	3 ^b
Toluene	30,000	RW4	24 ^a
Trans-1,2 dichloroethylene	16,268	MW-4	4.2 ^a
Vinyl Chloride	25,000	RW4	1 ^b
Thallium	100	MW-11	10 ^a

^a Florida Ground Water Guidance Concentration

^b Florida Primary Drinking Water Standard

Northeast Site

Groundwater investigations at the Northeast Site (GW-4 and 5) indicate that both standards and guidelines set forth in the Florida groundwater regulations (GW-6 and 8) have been exceeded for at least 11 constituents. Examples of the constituents detected, the maximum level reported, the well number, and the applicable standard are shown in Table 3.5.4.2-2.

As can be seen from the table, seven constituents have exceeded applicable standards and four have exceeded applicable guidelines. Up to 31 wells have exceeded the methylene chloride guidance level in a single sampling event (GW-4). It should be noted that 27 of these samples were less than 50 ppb and may be a laboratory artifact. The metals results shown above were performed on unfiltered samples. The report on these metals (GW-5) suggests that the turbidity of the samples may be the reason for the elevated levels.

Table 3.5.4.2-2
Northeast Site Groundwater Contamination

<u>Constituent</u>	<u>Maximum Concentration (ppb)</u>	<u>Well No.</u>	<u>Applicable Standard (ppb)</u>
Methylene Chloride	4,100,000	MW-2S	5 ^a
Benzene	88	MW-21	1 ^b
Acetone	5,900	MW-1S	700 ^a
Lead	146	W-6T	50 ^b
Trichloroethylene	2,400	MW-2S	3 ^b
Toluene	39,000	MW-2S	24 ^a
Trans-1,2 dichloroethylene	37,000	MW-2S	4.2 ^a
Vinyl Chloride	50,000	MW-4	1 ^b
Arsenic	72	MW-3	10 ^b
Cadmium	74	MW-5D	10 ^b
Chromium	1,170	W-6T	50 ^b

^a Florida Ground Water Guidance Concentration
^b Florida Primary Drinking Water Standard

The Pinellas Plant and the State are aware of these issues and both sites are the focus of ongoing investigatory efforts (I-GW-1). The issue of groundwater contamination was identified as a finding in the 1987 DOE Environmental Survey (GW-1). The efforts to date have included the performance of contaminant assessments for both sites, a feasibility study and interim remedial measure at the 4.5-Acre Site, and the initiation of a corrective measures study at the Northeast Site.

GW/CF-2 Inadequate Characterization of the Hydrogeologic Regime

PERFORMANCE OBJECTIVE: DOE Order 5400.4, CERCLA Requirements, states that DOE shall respond to releases or potentially imminent releases of hazardous substances (e.g., from inactive waste sites) in accordance with CERCLA and the National Contingency Plan (NCP), regardless of whether the facility is on the National Priorities List. The Order also states that corrective actions taken under RCRA should be conducted so as not to be inconsistent with the NCP. The NCP, in turn, sets forth specific steps that must be undertaken before implementing a remedy, including remedial investigations and feasibility studies. In addition, the guidelines for conducting RCRA corrective actions, which are a part of the Pinellas Plant's draft RCRA permit, also set forth similar steps, including conduct of a RCRA facility investigation (RFI). Also, guidelines for implementing Florida's Superfund-type program ("Corrective Actions for Ground Water Contamination Cases") specify a process similar to the NCP, including contamination assessments and feasibility studies. Guidelines for remedial investigations, RFIs, and contamination assessments state that the groundwater regimes should be adequately characterized to understand flow and other hydrogeologic features.

FINDING: The hydrogeologic regime at the Pinellas Plant has not been adequately characterized to define aquifer relationships, extent of contamination, and flow pathways.

Characterization of the hydrogeologic regime at the Pinellas Plant has been undertaken in limited areas of the site. Three principal studies have been performed that have attempted to define hydrogeologic and contaminant conditions. These studies have included the following:

- o A contamination assessment of the 4.5-Acre Site, where primarily organic chemical constituents have been found (GW-13),
- o A contamination assessment of the Northeast Site, where primarily organic chemicals have also been found (GW-5), and
- o A study of water levels and a pump test in the surficial aquifer performed by USGS to help define flow conditions (GW-16 and contained in GW-17).

While these studies have added greatly to the information about the hydrogeologic regime in a specific area of the site or in the case of the USGS study in the general region around the site, there is no comprehensive understanding of the flow relationship between the surficial aquifer and adjacent surface water. Additionally, the flow relationships between the

surficial aquifer and the deep aquifer and other geologic features such as relict sinkholes are not understood. The flow regime in the Upper Floridan aquifer only is understood on a broad regional scale (I-GW-7).

With regard to the 4.5-Acre Site, the FDER has expressed concern over the potential for groundwater contamination in a deeper zone on this site (GW-14). The remediation studies subcontractor for the Pinellas Plant agrees that the vertical extent of contamination and the relationship of the deeper zones to the surficial aquifer require further investigation (I-GW-9). The subcontractor believes that the vertical extent of contamination at the Northeast Site has been adequately defined, but this is in spite of the fact that they are unsure as to whether a series of three deeper wells actually penetrated the Upper Floridan aquifer. It should be noted that the three deep wells installed to assess contamination at the Northeast Site are located outside of the bounds of any contamination in the surficial aquifer, i.e., the wells are not located in the most likely area where contamination would occur.

Both GEND and PAO recognize that the flow relationships, especially with regard to the Upper Floridan aquifer, have not been adequately characterized (I-GW-7 and 8). This issue and the general lack of any site-wide assessment of the hydrogeology has prompted the site to incorporate specific hydrogeologic assessments as part of the Albuquerque Operations Office Environmental Restoration Program work to be performed through Los Alamos National Laboratory (I-GW-7). The consequence of this lack of understanding of the hydrogeologic relationships is that contamination could go undetected or could be interpreted to flow in a wrong direction.

The lack of characterization of the hydrogeologic regime was an issue identified in the DOE Environmental Survey performed in 1987 (GW-1). The implementation plan to address this finding indicated that the USGS would be performing this work (GW-15). However, only two groundwater contour maps and a letter detailing a pump test has resulted from this work (GW-16, 17, and I-GW-7). The site has had problems in getting work products from USGS in a timely fashion. This fact resulted in the cessation of USGS involvement with the site. The work products that were delivered, namely the two surficial aquifer contour maps, provide information on a localized basis, but lack sufficient detail for facility-specific evaluations (I-GW-9).

In addition to the lack of characterization of onsite hydrogeology, there has been no attempt to locate the approximately 240 wells that are known to exist offsite. These wells (in addition to the 22 permitted water supply wells) represent potential receptors of contaminated groundwater from the site. However, there is no indication that these wells have been impacted by the contamination based on the current understanding of the extent of the plumes.

GW/CF-3 Inadequate Abandonment of Groundwater Wells

PERFORMANCE OBJECTIVE: Florida regulations, F.A.C. 17532.440, (I-GW-11) require that wells 2 inches in diameter or greater be properly abandoned when they are no longer to be used. The purpose of these regulations is to minimize the potential for contamination of aquifers by abandoned wells which could act as open conduits for surface water and/or contaminants from the surface, or communication between aquifers.

FINDING: A deep well, greater than 2 inches in diameter, used for irrigation purposes at the Pinellas Plant, is thought to have not been abandoned in accordance with the regulations (GW-1). In addition, approximately 79 other monitoring wells (less than 2 inches in diameter) installed at the Pinellas Plant (GW-1) have not been properly abandoned. While the lack of proper abandonment for the 79 wells is not currently a compliance issue, the State is intending to change the regulation in March 1990 to include all wells.

Wells have been installed at the Pinellas Plant for monitoring groundwater and for water supply for irrigation purposes. In 1957 or 1958 a water supply well was installed during the construction of the Pinellas Plant. This well was used for lawn irrigation and was reported to be installed into the Upper Floridan aquifer. It has been reported that the well was 4 inches in diameter (I-GW-12). In 1964 this well was abandoned and a second well was installed to replace the first. Both wells were located in the Bldg. 100 area and are now covered by a slab. The second well was known to be grouted shut, but there is no record of proper closure (i.e., grouting) of the older well. Florida regulations require that wells with diameters of 2 inches or greater be properly abandoned (I-GW-11).

The 79 wells of less than 2 inches in diameter were installed as part of various programs through the years, including the following:

- o Twenty-seven wells were installed as part of a perimeter monitoring program in 1973.
- o Seventeen wells were installed for monitoring groundwater beneath the spray irrigation field assumed to be installed in 1972.
- o Fourteen wells were installed adjacent to the underground radioactive waste pipeline in 1973.
- o Twenty-one wells were installed as part of a study of groundwater iron content in 1970.

All of these wells were installed up to 30 feet deep into the surficial aquifer; however, most are at depths of less than 15 feet. The lack of proper abandonment is indicative of the lack of a cohesive groundwater monitoring program at the site which would have, or may have been able to, address these abandoned wells properly (I-GW-6 and 7). (See related Groundwater Finding GW/BMPF-1.)

The lack of proper abandonment of wells was noted as a finding in the Environmental Survey report in 1987. The site is aware of this finding, as is the State. The implementation plan to address these findings indicated that, because there was no specific regulation requiring the site to abandon the wells, there was no reason to pursue this matter (GW-15). The status of the deep well, which was noted in the Environmental Survey findings and is currently subject to regulation, was not addressed in the implementation plan.

Of particular note, with regard to the wells that are less than 2 inches in diameter, is that the State's abandonment procedures are currently under revision. These revisions will require proper abandonment of all wells, regardless of the size of the well. Under this proposed regulation, all the

wells on the site less than 2 inches in diameter would need to be properly abandoned and will be applied retroactively. The regulation is proposed to be in effect in March 1990 (I-GW-11) and will be applied retroactively.

GW/CF-4 Inadequate Groundwater Monitoring Program

PERFORMANCE OBJECTIVE: DOE Order 5400.1 requires facilities to have a Groundwater Protection Management Program, which includes a groundwater monitoring plan, in place by May 1990.

FINDING: The Pinellas Plant has not made significant progress in the development of the Groundwater Protection Management Program, which includes a groundwater monitoring plan, and will likely be unable to meet the May 1990 deadline (I-GW-5).

The Pinellas Plant does not currently have a routine groundwater monitoring program (I-GW-6 and 7) as part of its environmental monitoring. Although groundwater monitoring associated with specific contaminant investigations on the facility has taken place, such as at the 4.5-Acre and Northeast Sites (GW-1, 5, and 12), routine monitoring has not taken place since 1982. Most groundwater monitoring has been directly associated with a project-specific function (GW-1).

DOE 5400.1 contains requirements for a groundwater monitoring plan as part of the Groundwater Protection Management Program. However, the site (I-GW-5) has indicated that no significant progress has been made toward meeting this goal. In fact, they anticipate being unable to comply with the deadline specified by the DOE Order.

The lack of a routine program has resulted in the site's inability to track and monitor movement of groundwater contaminant plumes which exist in at least two principal areas on- and offsite (GW-1). These areas are the 4.5-Acre Site and the Northeast Site where primarily volatile organic chemicals have contaminated the shallow groundwater aquifer (see Finding GW/CF-1). At the Northeast Site, for example, methylene chloride has been detected as high as 4,100,000 parts per billion (ppb) in the groundwater (GW-5). At the 4.5-Acre Site, methylene chloride has been detected as high as 3,000,000 ppb in the groundwater in one well (GW-20).

Suspected movement of the plume outside the boundaries of the 4.5-Acre Site prompted the initiation of an Interim Remedial Action (IRA) and additional studies (GW-12). Routine monitoring could help the site evaluate the rate, quantity, and direction of plume movement to better plan future activities and responses. It would also allow for the evaluation of seasonal fluctuations in groundwater levels.

The inability to comply with the deadline is believed to be directly related to the lack of environmental personnel at GEND (I-GW-1 and 7). This is the main factor in the lack of a cohesively managed groundwater program (I-GW-7).

3.5.4.3 Best Management Practice Findings

GW/BMPF-1 Inadequate Groundwater Monitoring Well Maintenance

PERFORMANCE OBJECTIVE: Industry practice typically provides that monitoring wells should be kept in a condition such that chain-of-custody can be maintained, surface infiltration is minimized, and wells can be readily identified.

FINDING: Monitoring wells are not maintained and inspected on a regular basis. This is particularly evident at the 4.5-Acre Site.

The Pinellas Plant does not currently have a program for maintaining the integrity and usefulness of the groundwater monitoring wells (I-GW-8). Onsite inspection of approximately 35 monitoring wells at the 4.5-Acre Site revealed the following:

- o Only three wells (in this case piezometers) were actually labeled or marked in a way which could identify them.
- o Ten wells were found to have surface seals (grout plugs at the surface) that were cracked.
- o Of these ten wells, six were found to have loose casings, which in at least one instance would have allowed for removal of the casing.
- o Two piezometers and one well were found to not have locks.
- o Locks have had to be removed from wells with "bolt-cutters," likely due to the fact that the locks have seized.
- o Casings have rusted, weeds have grown up around the wells making access difficult, and well markers have disappeared and/or been knocked over.

Best management practice provides that wells be maintained in order to ensure the integrity of the monitoring system. This is especially important with regard to chain-of custody requirements. The well casings found to be loose could be removed to allow unauthorized access to the well. Wells that are not locked present the same type of problem. Cracked casing seals not only allow for the casings to come loose but also can allow for the introduction of surface infiltration along the casing. Wells that are not labeled not only make field identification more difficult, but could cause confusion and possible mislabeling of samples.

Site personnel were generally aware of the condition of the wells at the 4.5-Acre Site but have been unable to maintain them due to a lack of staff. The lack of a routine monitoring program at the facility may also contribute to the current condition of the wells. If wells were monitored on a routine basis, they could be inspected during sampling and problems noted and corrected (see Groundwater Finding GW/CF-4).

3.5.5 Waste Management

3.5.5.1 Overview

The purpose of the Waste Management (WM) portion of the environmental assessment of the Pinellas Plant is to: 1) evaluate Pinellas Plant current hazardous, radioactive, mixed (radioactive and hazardous), and solid waste management practices; 2) evaluate compliance with applicable Federal and Florida State waste management regulations and DOE Orders; and 3) analyze Pinellas Plant waste management programs with respect to best management practices.

The Pinellas Plant generates and manages hazardous, radioactive, and nonhazardous solid waste. The Pinellas Plant has generated in the past, and is currently storing 38 drums of mixed radioactive and hazardous waste (mixed waste). The Pinellas Plant is regulated by Resource Conservation & Recovery Act, Florida Statutes and the Florida Administrative Code as a permitted storage and treatment facility of hazardous waste. The major hazardous waste streams generated include wastes generated from the manufacturing and engineering of neutron generators, thermal batteries and specialty electrical components; and spent and contaminated halogenated and nonhalogenated solvents, alcohols and electroplating wastes. These wastes are generally managed by onsite accumulation and storage in drums or in 1 of 5 above ground tanks, followed by either; onsite treatment including neutralization, filtering or thermal treatment, or offsite treatment and disposal.

Mixed wastes generated in the past at the Pinellas Plant consist of radioactive (tritium) contaminated sludges characteristically hazardous with E.P. Toxic levels of lead from the decommissioning of wastewater holding tanks (Health Physics tanks in 1986). These wastes are stored in Bldg. 1000. These wastes are included in the Plant Operating Permit and the Part B (Subpart X) permit application.

Radioactive wastes at the Pinellas Plant are generated from the use of tritium in manufacturing and engineering of neutron generators, from the destructive and nondestructive testing of neutron generators, and duct work from decommissioning of certain areas. Radioactive wastes are stored onsite prior to periodic shipment offsite to the DOE Savannah River Plant for disposal.

Nonhazardous solid waste generated onsite includes primarily paper and cardboard, glass, solidified foams and epoxies, scrap metals, wires, office furniture, construction debris, cafeteria waste and water soluble cutting oils (Trim).

The general approach to the WM assessment included observations of onsite operations and facilities, interviews with the GEND personnel, and review of documents. The information collected from these activities was evaluated with respect to Federal and State regulations and DOE Orders, as identified in Table 3.5.5-1.

The Waste Management Section is in the Environmental Health and Safety Program (EH&SP) and under the supervision of the EH&SP Manager. While the Manager position was vacant, the Manager of Employee and Plant Safety was acting

Manager. Both of these Managers report to the GEND General Manager who has oversight responsibility.

There were four findings identified; three compliance findings, and one best management finding. The compliance findings generally related to characterization of waste streams and combining wastes contrary to the site's waste minimization program. A major hazardous waste management issue at the Pinellas Plant is the combining of classified wastes with radioactive wastes for the purpose of disposal. The best management practice finding related to waste segregation practices.

Table 3.5.5-1
List of Applicable Waste Management
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Titles</u>	<u>Authority</u>
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5482.1B	Environmental Safety and Health Appraisal Program	DOE
DOE 5484.1	Environmental Protection Safety and Health Protection Information Reporting Requirements	DOE
DOE 5820.2A	Radioactive Waste Management	DOE
Florida Administrative Code	FAC 17-730, Hazardous Wastes	FDER
Florida Statutes	Part IV, Chapter 403	FDER
RCRA	40 CFR Parts 260, 261, 262, 264, 265, 268, and 270, Regulations for Management of Hazardous Waste	EPA

3.5.5.2 Compliance Findings

WM/CF-1 Combining Mixture of Classified Wastes With Radioactive Wastes for the Purpose of Disposal

PERFORMANCE OBJECTIVE: The Policy contained in DOE Order 5820.2A states that the generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions. GEND EH&SP Standard No. 5.9, section 3.3.6 requires minimization of radioactive wastes, and Section 3.4.4 requires assurance of only authorized radioactive wastes be placed in radioactive waste containers.

FINDING: Site personnel have been placing radioactive wastes in the same barrels with nonradioactive classified waste for the purpose of disposal.

In one area, personnel have been placing radioactive classified wastes in the same drum with nonradioactive classified wastes for the purpose of disposal at Savannah River. When a barrel of nonradioactive classified is full, a very small amount of radioactive waste is added purposely to render the entire barrel "Classified Radioactive Waste." The amount of this waste generated is about two drums per year.

In another area, personnel combine classified non-radioactive waste parts with classified radioactive waste parts for disposal as "Classified Radioactive Waste." This waste amounts to approximately four to six drums per year, which could be disposed of by an alternate means.

DOE policy is to have a Waste Minimization Plan by May 9, 1990. The consequences of not segregating these two waste streams is to increase the amount of radioactive waste that is sent to Savannah River. Segregation would reduce the waste sent by four to six drums per year.

The site is aware of this and it will be addressed in the Waste Minimization Plan. The site has a generally strong waste minimization program.

Failure to implement both DOE and GEND policies on radioactive waste minimization is the apparent cause of this. Another apparent cause is that the issue of management for classified wastes throughout the DOE Complex has not been adequately addressed. See related findings in the Tiger Team Reports for Kansas City Plant, and the Nevada Test Site.

WM/CF-2 Disposal of Characteristic Wastes (Extraction Procedure Toxic - Lead) in Nonhazardous Waste

PERFORMANCE OBJECTIVE: 40 CFR 261.11 requires the determination of hazardous wastes and the characterization of them prior to disposal.

FINDING: Wastes that are hazardous characteristic waste due to Extraction Procedure (EP) Toxic concentrations of lead greater than 5.0 mg/l are disposed of as nonhazardous.

Personnel in Area 110F use sponges to clean the tips of soldering irons while soldering. This operation leaves solder and flux on the sponges. The sponges had never been characterized and were disposed of as solid waste. As a result of the Tiger Team Finding, representative samples were analyzed using the Extraction Procedure. The concentration of lead was 7.0 mg/l which exceeds the hazardous limit of 5.0 mg/l (WM-11).

The waste management section has prepared an official memo to be distributed to all departments that perform soldering operations. Proper collection and disposal procedures shall be implemented as soon as the memo is approved.

The lack of waste stream analysis or characterization of all waste streams resulted in this improper disposal. Contributing factors include either the lack of understanding on the part of WM of the entire manufacturing process or the area supervisors not being aware of RCRA regulations.

WM/CF-3 No GEND Requirement or Operating Procedure Requiring Drums of Hazardous Waste be Secured During Transportation Onsite

PERFORMANCE OBJECTIVE: 40 CFR 265.173(b) requires that a container holding hazardous waste must not be opened, handled or stored in a manner which rupture the container or cause it to leak.

FINDING: Drums are moved about the facility with no GEND requirement in place that they be secured by straps or ropes during transit.

Containers are transported on pallets by forklift, but the site has no GEND procedure requiring the securing of these drums during transit.

The site is aware of this and does have straps and shock cord available for securing drums, and does use these cords or straps, but there is no GEND requirement for this procedure.

GEND has not seen the necessity for writing such a procedure. The site has not adequately assessed the potential consequences of, or the likelihood of, drums falling from forklifts during transit.

3.5.5.3 Best Management Practice Findings

WM/BMPF-1 Solid Waste Segregation Practices Are Not Implemented Uniformly

PERFORMANCE OBJECTIVE: GEND plant policy (GOP G1.20) is to minimize the generation of solid waste as the preferred method of reducing the environmental impact of the plant's operations.

FINDING: Maintenance shop segregation of metals from normal trash in one of the "metals" barrels is inadequate.

Paper trash was observed in one of the barrels labeled "metals" in the Maintenance Area 124. In the rest of the plant, segregation of wastes, metals, glass, paper/burnables, particular types of metals was done very well. This inconsistency increases the potential for improper solid waste disposal and thus for the inadvertent introduction of hazardous wastes into the nonhazardous solid waste stream. It also increases the hazards recognition

burden of waste facility operators. It also decreases the value of the scrap metal, or increases the labor of resegregation.

The site is aware of this situation and there will be more training on the segregation aspect of waste accumulation.

This was a finding of the 1987 Environmental Survey. The Survey reported that there were areas of the plant where containers were unmarked and the wastes were not segregated ("glass only" can was filled with metallic and paper waste, vapor blast residue and waste paper) and containers were not color coded per plant requirements. The color coding has been corrected, and cans marked (WM-9).

The apparent cause of this finding is that site personnel at this particular location were not following GEND policy.

3.5.6 Toxic and Chemical Materials

3.5.6.1 Overview

The purpose of the toxic and chemical materials assessment was to evaluate Pinellas Plant compliance with applicable TSCA, FIFRA, and DOE Order requirements. The materials covered in this assessment include PCBs, asbestos, herbicides, pesticides, and various chemicals used and stored in bulk quantities (acids, bases, solvents, and fuels). TSCA and FIFRA cover the handling, use, storage, and disposal of PCBs and pesticides, respectively.

There were three basic components of the assessment:

- o Interviews were conducted with Pinellas Plant personnel with regard to use, storage, and disposal of PCBs, herbicides, pesticides, asbestos, and bulk chemicals.
- o Areas in the Pinellas Plant where PCBs, herbicides, pesticides, asbestos, and bulk chemicals were used or stored were inspected.
- o Documents such as policies and procedures, required reports, and regulatory documentation were reviewed. The specific regulations, requirements, and guidelines against which the Pinellas Plant was assessed are presented in Table 3.5.6-1.

The last PCB items (transformers) were removed from the Pinellas Plant in February 1988 and, currently, there are no PCBs or PCB containing electrical equipment on site. PCBs were never used at the Pinellas Plant as heat transfer fluids and there has never been any evidence of spills or leaks at the facility.

There is asbestos-containing insulation and floor tile at the Pinellas Plant. All asbestos abatement work is conducted in conformance with NESHAP regulations under the direct supervision of a site Industrial Hygienist. All asbestos-containing material is wet down, double bagged and shipped offsite to an approved landfill. No asbestos waste is disposed of on site. An asbestos-containing building survey was conducted at the Pinellas Plant in 1989. The location, condition, and amount of asbestos containing-material was determined in 13 site buildings (approximately 40 percent of the total building area).

Pesticides are applied at the Pinellas Plant by a contractor licensed by the State of Florida. One restricted use pesticide (safrotin) is applied by the contractor. The site requires that all empty pesticide containers be removed from the plant site by the contractor.

The procurement of process and maintenance chemicals used at the Pinellas Plant is reviewed and approved by Environmental Health and Safety Programs (EH&SP). EH&SP maintains a Material Safety Data Sheet (MSDS) file and provides information for the proper labeling of received chemical materials. Purchases are shipped to the Incoming Test and Inspection Department's bonded stock area where a hazard alert (diamond) label, similar to the one developed by the National Fire Protection Association, is placed on all chemical containers. The label contains health hazard, fire hazard, reactivity and

storage, and disposal code information. The storage and disposal codes were developed by GEND personnel. This chemical labeling system provides the user with information on the material's principal hazard and relative severity, the material's storage requirements (segregation of incompatibles), and the material's waste classification. The system is well designed and maintained.

The toxic and chemical materials assessment identified four compliance findings covering TSCA recordkeeping requirements, RCRA underground storage tank closure requirements, hazardous chemicals spill containment, and incompatible material storage. The most significant finding involves the unavailability of the annual PCB reports.

Table 3.5.6-1
List of Applicable Toxic Substances
and Hazardous and Chemical Materials
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
40 CFR Part 761, Polychlorinated Biphenyls Control (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	Toxic Substances Act	EPA
40 CFR Part 165, Pesticide Storage/Disposal Regulations	Federal Insecticide Fungicide, and Rodenticide Act	EPA
40 CFR Part 112, Oil Pollution	Clean Water Act	EPA
40 CFR Part 280, Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)	Resource Conservation and Recovery Act	EPA
General Operating/Environmental Monitoring Procedures	GEND Applicable Procedures	GEND
DOE 5400.1	General Environmental Protection Program	DOE

3.5.6.2 Compliance Findings

TSCA/CF-1 Unavailability of Annual PCB Reports

PERFORMANCE OBJECTIVE: 40 CFR Part 761.180 (2) requires that annual reports covering the disposition of PCBs and PCB items should be maintained for at least 5 years after the facility ceases using or storing PCBs and PCB items in the prescribed quantities.

FINDING: The annual PCB reports were not available for review.

The last PCB items (transformers) were removed from the Pinellas Plant in February 1988 and, currently, there are no PCBs or PCB containing electrical equipment on site. TSCA requires that annual PCB reports be maintained for at least 5 years after the facility ceases using or storing PCBs and PCB items in the prescribed quantities, i.e., at least 45 kilograms of PCBs contained in PCB containers or one or more PCB transformers, or 50 or more PCB large, high, or low voltage capacitors. The site cannot readily locate its annual PCB documents, which is a nonconformance with TSCA-promulgated regulations. The site was aware of the TSCA recordkeeping requirements (TSCA-1) but was not aware that the files were not readily available for inspection. The site is attempting to locate the files.

The cause that resulted in this finding appears to be human factors. The site was not aware that its PCB documents (annual reports) were not readily available for inspection.

TSCA/CF-2 Underground Storage Tanks (UST) RCRA Closure Requirements

PERFORMANCE OBJECTIVE: 40 CFR Part 280.70 (c) requires the permanent closure of underground storage tanks (USTs) taken out of service for more than 12 months.

FINDING: The current status of a 5000-gallon UST that was taken out of service in 1983 does not comply with the RCRA UST closure requirements.

In 1983 a 5000-gallon UST located north of Bldg. 500 was emptied of diesel fuel and filled with water. RCRA requires that USTs which have been out-of-service for longer than 12 months must be permanently closed. The permanent closure requirements described in 40 CFR Part 289.71(b) require the removal of all liquids and accumulated sludges and either the removal of the tank from the ground or the filling up the tank with an inert solid material. The tank currently is filled with water which does not comply with the RCRA UST closure requirements. The site is aware of this problem and has a project in place to remove this UST (TSCA-2). The project is scheduled to begin in February or March 1990 (I-TSCA-10).

TSCA/CF-3 Inadequate Spill Containment of Hazardous Chemicals

PERFORMANCE OBJECTIVE: The GEND Environmental Health and Safety Standard No. 4.8 requires that hazardous material storage areas must be provided with spill containment.

FINDING: Some of the hazardous materials storage areas at the Pinellas Plant do not have spill containment.

The undiked storage areas identified include the following:

- o A 225-gallon plastic tank (day tank) of sulfuric acid and a 100-gallon steel tank of Aquasive corrosion inhibitor at the cooling tower,
- o Two 225-gallon plastic tanks (day tanks) of sulfuric acid north of and adjacent to Bldg. 500, and
- o One 30-gallon drum of Derrusolv industrial degreaser and one 55-gallon drum of sodium hydroxide solution between Bldgs. 600 and 1040.

Because the storage areas are undiked, an accidental release of chemicals could potentially counteract the purpose of GEND's hazardous material storage standard (TSCA-4) which is to assure the health and safety of personnel and protect plant property and equipment. The chemical storage problem at the cooling tower was identified during the 1987 Environmental Survey and the site already has a corrective action plan in place (TSCA-5). The plan involves the construction of a chemical storage building beginning in late January or February 1990 (1-TSCA-14). The other chemical storage problems were not known to the site. One of the sulfuric acid tanks has been emptied and both tanks have been moved to the diked area adjoining the north wall of Bldg. 500 (verified by the TSCA specialist). Also, the drums of degreaser and sodium hydroxide solution have been moved to the bonded stock area (verified by the TSCA specialist) which has adequate spill containment.

The cause that resulted in this finding appears to be failure to follow procedures. Neither Bldg. 500 nor Bldg. 1040 personnel stored all hazardous chemicals in areas with proper spill containment as required by GEND Standard No. 4.8.

TSCA/CF-4 Incompatible Material Storage

PERFORMANCE OBJECTIVE: The GEND Environmental Health and Safety Standard No. 4.8 requires that hazardous materials shall be segregated by class and stored in areas that provide physical separation between the classes.

FINDING: Incompatible chemicals, such as sulfuric acid and sodium hydroxide solution, are stored adjacent to each other in the bonded stock area.

In the bonded stock area, eight 55-gallon drums of sodium hydroxide solution are stored adjacent to four 55-gallon drums of concentrated sulfuric acid. Of the five bulk chemical storage areas inspected, this was the only area where incompatible material storage was found; however, not all the site's bulk chemical storage areas were reviewed. The GEND Environmental Health and Safety Standard No. 4.8 (TSCA-4) requires that hazardous materials shall be segregated by class (flammable, toxic, acidic, alkaline, oxidizing) and stored in areas that provide physical separation between the classes. The bonded stock area does not have a berm or other means of preventing the incompatible chemicals from mixing in the event of a catastrophic release, which could

potentially affect the safety of personnel as well as damage site property. The site will arrange to have the incompatible materials separated (1-TSCA-9). The cause that resulted in this finding appears to be failure to follow procedures. The site personnel responsible for the bonded stock area stored incompatible chemicals adjacent to each other, which is not in compliance with GEND Standard No. 4.8.

3.5.6.3 Best Management Practice Findings

None.

3.5.7 Quality Assurance

3.5.7.1 Overview

The purpose of this quality assurance (QA) assessment was to evaluate the Pinellas Plant programs for the generation and validation of environmental monitoring data. The data (air emissions and water effluents) are used to indicate compliance with Federal, State and local reporting requirements.

There were three basic components of the assessment:

- o Interviews with analytical chemistry personnel, sampling technicians, offsite laboratory personnel, and EH&SP management responsible for QA/QC activities with respect to environmental monitoring sampling and analysis;
- o Observations of sampling techniques; and
- o Review of QA/QC-related documentation such as environmental monitoring procedures, analytical procedures, QC documentation, audit reports, and data reports.

The specific regulations, requirements, and guidelines against which the Pinellas Plant was assessed are presented in Table 3.5.7-1.

The Pinellas Environmental Health and Safety Program (EH&SP) department is responsible for administrating the site environmental monitoring program. All radiological analyses are performed on site by the Environmental Chemistry Laboratory (ECL). Radiological analyses include tritium in air and water (surface water and plant effluent to the POTW) samples, and plutonium in air and soil samples. The ECL also analyzes POTW samples for 5 day biochemical oxygen demand and suspended solids. The onsite Chemistry Laboratory analyzes POTW samples for cadmium, chromium (total), copper, lead, nickel, silver, and zinc. The site also uses an offsite contractor laboratory to analyze POTW samples for cyanide and mercury.

EH&SP is responsible for the external QA program for the Pinellas Plant laboratories. Environmental blind samples from the DOE Environmental Monitoring Laboratory and the EPA Environmental Monitoring and Support Laboratory are supplied three times a year. EH&SP does not send external QC samples to the offsite contractor laboratory. Pinellas Plant accepts State of Florida certification for environmental laboratories.

The QA assessment identified two compliance findings covering environmental monitoring program audits and chain-of-custody procedures and a best management practice finding covering good laboratory practices. The most significant finding involves insufficient oversight (auditing) of the site environmental monitoring programs. The cause of this finding appears to be lack of personnel resources.

Table 3.5.7-1
List of Applicable Quality Assurance
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
DOE 5400.1	General Environmental Protection Program	DOE
Draft DOE 5400.xx	Radiation Protection of the Public and the Environment, March 1988	DOE
Draft DOE 5400.xy	Guide for Environmental Radiological Surveillance at DOE Installations	DOE
DOE 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE/EP-0023	A Guide for Environmental Radiation Surveillance at DOE Installations	DOE
DOE 5481.4	Quality Assurance	DOE
EPA QAMS-001/80	Strategy for the Implementation of the EPA's Mandatory Quality Assurance Program	EPA
40 CFR Part 136	Guidelines Establishing Test Procedures for the Analysis of Pollutants	EPA
EPA Guidance	Principles for Sampling and Analytical Methods for Radionuclides Emitted from EPA Facilities, October 1987	EPA
GEND Applicable Procedures	General Operating/Environmental Monitoring Procedures	GEND

3.5.7.2 Compliance Findings

QA/CF-1 Audits of the Environmental Monitoring Program Are Not Performed on a Scheduled Basis

PERFORMANCE OBJECTIVE: Periodic audits of activities in the Environmental Protection Program are a requirement of the GEND Quality Program Plan (QPP) for the Environmental Chemistry Laboratory and Procedure EM-7.01, the QPP for the Environmental Protection Program.

FINDING: Periodic audits of the sampling and analysis programs which support the GEND Environmental Monitoring Program have not been performed as required by GEND procedures.

The Quality Program Plan (QPP) for the Environmental Protection Program (QA-1) requires that periodic observation of the sampling activities performed by the Utilities Operations Unit be performed by the Specialist Environmental Protection. In addition, the QPP for the Environmental Chemistry Laboratory (QA-2) requires that internal audits be performed periodically by the Quality Assurance unit at GEND. However, neither the sampling program (I-QA-5) nor the analysis program (I-QA-2) have had periodic audits by GEND. Also, the contractor lab which supports the site's environmental monitoring program has not been audited by EH&SP to the requirements of the State required QPP and GEND's QA requirements (I-QA-5). The Hazardous Waste Unit at GEND has audited the contractor lab but not for analyses which support the site's Environmental Monitoring Program (I-WM-9). The site Environmental Monitoring Lab was audited by Sandia Albuquerque in 1988 (QA-3) and the site responded to the audit findings (QA-4).

Without periodic monitoring of the activities (contractor lab, site sampling and analysis programs) which support the Environmental Monitoring Program, non-conformances may not be discovered and corrected. This could adversely affect the quality of the data generated.

The cause that resulted in this finding appears to be lack of staff resources.

QA/CF-2 Chain-of-Custody Procedure Not Being Followed Completely

PERFORMANCE OBJECTIVE: The GEND Chain-of-Custody Procedure (EM-6.01) requires that possession of environmental monitoring samples must be traceable.

FINDING: Samples collected for the site's Environmental Monitoring Program on weekends do not have verifiable and defensible chain-of-custody documentation.

Discrepancies with the site's Chain-of-Custody Procedure (QA-5) include the following:

- o On weekends, samples are delivered to the Environmental Monitoring Lab, which is unattended; the samples are not fitted with custody seals; and the lab is not locked.

- o Eight out of ten chain-of-custody forms at the Main Laboratory (metals analysis) are not signed by the analyst who takes final possession of the samples.
- o Twelve out of nineteen chain-of-custody forms reviewed in the Environmental Monitoring Laboratory are partially completed in pencil, not ink.

The site Chain-Of-Custody Procedure requires that possession of environmental monitoring samples must be traceable from the time the samples are collected until they are received by the laboratory and the results are returned to the appropriate person. Any break in the chain-of-custody could invalidate the analytical data generated. These data are incorporated into the site Annual Environmental Report which is submitted to DOE Headquarters, local, State, and Federal regulatory agencies. The site did not recognize the above deficiencies but has taken corrective action. A lock has been placed on the Environmental Monitoring Laboratory Door (this was verified by the QA specialist); laboratory personnel were instructed in proper sample transfer signing procedures so that the chain-of-custody is signed by the analyst who takes final possession of the samples (1-QA-1); a letter (QA-6) was sent to the offsite contractor responsible for filling out the chain-of-custody in pencil that the form must be signed in ink or the lab will not accept the samples. All corrections will be incorporated into the revised chain-of-custody procedure (1-QA-1).

The cause that resulted in this finding is training. Site personnel did not pay proper attention to the site's chain-of-custody requirements.

3.5.7.3 Best Management Practice Findings

QA/BMPF-1 Deficiencies in Good Laboratory Practices

PERFORMANCE OBJECTIVE: Good laboratory practices as determined by the EPA help ensure the generation of quality analytical data.

FINDING: There are deficiencies in the site's environmental monitoring sampling and analysis programs which may affect the validity and defensibility of the data produced in support of the Environmental Monitoring Program.

Deficiencies observed in the sampling and analysis programs include, but may not be limited to, the following:

- o General Chemistry Laboratory Atomic Absorption Log Book entries are in pencil. Entries in pencil may be lost or rendered unreadable through erasure or liquid spills.
- o The bottle caps for onsite tritium surface water samples, rather than the sample bottles themselves, are labeled with the sample number. Bottle caps can be easily exchanged or lost, thus invalidating one or more samples.

- o Sampling procedure EM-4.01, "Tritium in Onsite Surface Waters" (QA-7), is generic in that specific step-by-step sampling instructions are not provided. Also sample locations points are on the chain-of-custody forms and not in the sampling method.
- o Sampling procedure EM-4.02, "Tritium in Off-Site Surface Waters" (QA-8), requires that for multiple sample points, the water dipper must be rinsed twice before a sample is taken. EM-4.01, "Tritium in On-Site Surface Waters," requires that the dipper be rinsed only once.
- o None of the 10 radiological control charts in the Environmental Monitoring Laboratory are up to date, as noted below.

<u>Control Chart</u>	<u>Last Entry of Data</u>
Alpha Spectrometers A,B,C,D	August 1989
High Level Counter Standards	October 1989
High Level Counter Background	August 1989
Low Level Counter % Efficiency	November 1989
Low Level Counter Background	November 1989
Gross Alpha Counter Background	August 1989
Gross Alpha Counter % Efficiency	November 1989

Up-to-date control charts are needed to determine if any out-of-control conditions are developing so that corrective actions can be taken.

- o Some documents in the Environmental Chemistry Laboratory (ECL) are not properly numbered, which makes it difficult to correlate and/or reference specific documents and/or revisions.

The above deficiencies could adversely affect the quality and defensibility of the environmental monitoring data generated. The site was not aware of these deficiencies, but has initiated some corrective actions. The General Chemistry Laboratory analyst was notified that log book entries are to be in ink, not pencil (1-QA-1) and the GEND Technical Information Center will (QA-9) assign control numbers to the ECL documents.

The causes that resulted in this finding appear to be training and lack of staff resources. Some site personnel were lax in following good laboratory practices.

3.5.8 Radiation

3.5.8.1 Overview

The purpose of the radiation portion of the Pinellas Plant Tiger Team environmental assessment was to evaluate facility environmental radiation protection programs to determine the compliance status with those documents listed in the Draft Tiger Team Manual, applicable Federal and State regulations, Department of Energy (DOE) Orders and GEND policies and procedures. The programs were also reviewed against draft DOE 5400.xx and DOE 5400.xy, and against commonly accepted industry practices and standards of performance. Table 3.5.8-1 lists applicable regulations and/or requirements used to evaluate the radiation discipline. The scope of the review included interviews with GEND and other contractor personnel, site inspections of selected Pinellas Plant facilities and locations, including process operations areas, stack sampling areas, surface water bodies, ambient air monitoring sites, waste management areas, the radiochemistry laboratory, as well as review of environmental as low as reasonably achievable (ALARA) activities. The Environmental Subteam found no processes or operations which pose an immediate and unacceptable radiation safety risk to the environment or public.

The background radiation in the vicinity of the Pinellas Plant is both natural and man-made. Sources include cosmic radiation, natural radioactive materials in the soil, fallout from past worldwide atmospheric weapons detonations and accidental releases. The radiological environmental monitoring program at the Pinellas Plant evaluates stack air effluents for tritium, krypton and plutonium; ambient air for tritium and plutonium; water effluents for tritium and soil samples for plutonium.

As a part of the environmental radiation protection assessment, reviews were coordinated with other team specialists to ensure that all potential radiation protection problem areas were evaluated in sufficient detail. Coordination with other specialists included: Air, Water, and Groundwater specialists, to evaluate monitoring programs and effluent controls; Waste Management specialist, to assess the adequacy of waste management of radioactively contaminated waste; Quality Assurance specialist, to evaluate radiochemistry quality assurance procedures; and Inactive Waste Site specialist, to evaluate the potential hazard from inactive sites. Also, reviews were conducted concurrently with the radiation protection specialist on the Safety and Health Subteam. Observations and potential findings were shared between the Tiger Team Subteams.

Pinellas Plant environmental radiation protection programs were assessed against the requirements for ensuring radiation protection of the public and the environment. These requirements include, compliance with dose standards, dose assessment methodologies, control of airborne and liquid discharges, and radioactive materials. The Pinellas Plant releases relatively small amounts of radioactivity in airborne and liquid discharges. With the exceptions noted in the findings the existing programs are generally sound and ensure that the public and environment are adequately protected. The Tiger Team noted that lack of adequate staffing resources, documentation of activities, adherence to existing procedures, updating of procedures, and design of sampling equipment were areas needing attention. The three findings listed in this section

discuss non-media radiation issues. Radiation media-related findings are found in the Air (3.5.1), Soils/Sediments (3.5.2), Surface Water (3.5.3), Waste Management (3.5.5), Quality Assurance (3.5.7), and Environmental Monitoring and Surveillance (3.5.11) sections of this report.

Table 3.5.8-1
List of Applicable Radiation
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Title</u>	<u>Authority</u>
DOE 5400.1	General Environmental Protection Plan	DOE
Draft DOE 5400.xx	Protection of the Public and the Environment	DOE
Draft DOE 5400.xy	Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE 5484.1	Environmental Protection, Safety and Health Protection Information Reporting Requirements	DOE
DOE 5820.2A	Radioactive Waste Management	DOE
40 CFR 191	Environmental Standards for Radioactive Wastes	EPA
DOE 5482.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5480.4	Comprehensive Environmental Response, Compensation, and Liability Act Program	DOE
40 CFR 61	National Emission Standard for Hazardous Air Pollutants	EPA
DOE 5500.3	Emergency Planning	DOE
DOE/EV-1830-T5	A Guide to Reducing Radiation Exposure to As Low As Reasonably Achievable (ALARA)	DOE
GEND Procedures		
EM-1.01	Tritium Stack Releases - Daily Columns	GEND
EM-1.02	Tritium Stack Releases - Monthly Columns	"
EM-1.03	Tritium in Air - On and Offsite Environmental Monitoring	"
EM-2.01	Plutonium Stack Releases - Building 400	GEND
EM-2.02	Plutonium in Air - On and Offsite Environmental Monitoring	"
EM-2.03	Plutonium Sampling Train Rotameter Calibration	"

Table 3.5.8-1 (Continued)

<u>Regulations/ Requirements/ Guidelines</u>	<u>Sections/Title</u>	<u>Authority</u>
EM-3.01 EM-3.02	Tritium in Process Waste Waters Tritium and Chemical Constituents in Industrial Waste Waters	GEND "
EM-4.01 EM-4.02	Tritium in Onsite Surface Waters Tritium in Offsite Surface Waters	GEND "
EM-5.01	Plutonium in Soil - On and Offsite Environmental Monitoring	GEND

3.5.8.2 Compliance Findings

R/CF-1 Deficiencies in Dose Assessment Methodologies

PERFORMANCE OBJECTIVE: Dose assessments at the Pinellas Plant should be performed in a manner that ensures compliance with Federal and DOE requirements in 40 CFR Part 61, DOE Orders 5484.1 and 5400.1, and Draft DOE Order 5400.xy. Computer codes used in dose assessment documentation should be in accordance with ANSI/ANS 10.3-1986, "Guidelines for the Documentation of Digital Computer Programs."

FINDING: Dose assessment methodologies are not sufficiently documented to demonstrate full compliance with Federal and DOE requirements. The following dose assessment deficiencies were observed during review of the program with EH&SP personnel (I-R-16):

- o An overall, written site dose assessment plan for compiling, evaluating, and reporting the environmental monitoring and calculated data does not exist. Such procedures or plans help to assure the dose assessment is as accurate and realistic as practical in accordance with DOE 5484.1 and as detailed in draft DOE 5400.xy.
- o Documentation does not exist explaining why surface water, groundwater, penetrating radiation, and biota pathway doses are not performed.
- o Written procedures for dose assessment computer programs do not exist as required for full compliance with DOE 5484.1 and further requirements delineated in draft DOE 5400.xy. The assessment of offsite doses from the Pinellas Plant is performed by environmental personnel using data, in part, supplied by Health Physics personnel. The Pinellas Plant currently relies on the personal knowledge and the experience of these staff members to properly operate these programs.
- o Computer programs used to perform dose assessment calculations are not periodically checked against a well-defined "benchmark problem" with a generally accepted solution to serve as a reference point as implied by DOE 5484.1 and DOE 5400.1 and delineated in draft DOE 5400.xy and ANSI/ANS-10.3-1986. This reference point serves to demonstrate proper functioning of the computer system operating environment for the AIRDOS - EPA atmospheric transport code. Such a "benchmark problem" may be more appropriately developed by DOE/HQ and disseminated to all DOE AIRDOS users.
- o Plutonium and krypton source term inputs are not completely documented. A procedure for determining annual krypton release estimates was provided on January 26, 1990 as a result of this observation. Site personnel also indicated initialing of plutonium analytical result reviews would take place.

- o Stack flow rates and velocities are calculated using fan ratings and other information rather than measured data. Project upgrade No. 9082002 should provide for in-stack flow measurements.
- o Default values used in the dose assessment program are not documented as being appropriate for the site.
- o The program user has not been formally trained on the capabilities, proper use, and limitations of the program. Discussion with DOE HQ Environmental Guidance Division, Radiation Protection personnel indicated that training on AIRDOS use at DOE facilities would be forthcoming when draft DOE 5400.xx and draft DOE 5400.xy are finalized (I-R-18).

Although the dose equivalents to the maximally exposed individual reported by the Pinellas Plant have consistently been well below the NESHAP limit of 10 mrem/year for whole body irradiators (no target organ irradiators are released in detectable quantities), the program as it exists today is not capable of defending the quality aspects required by existing and draft DOE Orders. The tritium and plutonium stack findings in the air section (3.5.1) are also related to these observations.

The deficiencies noted for the Pinellas dose assessment methodologies are attributed to the lack of procedures requiring specific quality assurance actions and documentation of actions, and a perception of low priority on the part of the responsible staff.

R/CF-2 Lack of Complete Documentation of Radiochemistry Laboratory-Developed Computer Programs

PERFORMANCE OBJECTIVE: All computer programs designed to process data developed for the purposes of performing dose assessments need to be documented in a form capable of assuring compliance with 40 CFR 61, DOE Orders 5484.1, 5400.1, Draft Order 5400.xy and should be in accordance with ANSI/ANS 10.3-1986 "Guidelines for the Documentation of Digital Computer Programs."

FINDING: Computer programs used for processing radiochemistry analytical data are not completely documented. Although several of the computer programs written by the current laboratory supervisor (PLUTO, PLUTO 2, and GELs) give details on what the program should do and modifications that have been made, there are no "benchmark problems" for these programs and documentation of test runs to serve as references of proper system functioning following modifications to programs (I-R-15).

Documentation for three other programs (GROSSA, PF GROSS 5, and Automation) is not as complete as the above-mentioned programs, including the lack of a "benchmark problem," and is also not in line with recommendations in ANSI/ANS 10.3-1986.

The deficiencies noted for the Radiochemistry Laboratory are attributed to the lack of resources.

3.5.8.3 Best Management Practice Findings

R/BMPF-1 Environmental "As Low As Reasonably Achievable" (ALARA) Program Deficiencies

PERFORMANCE OBJECTIVE: ALARA Program Guidance is found in U.S. DOE, "A Guide to Reducing Radiation Exposures to As Low As Reasonably Achievable (ALARA)" and "Health Physics Manual of Good Practices for Reducing Radiation Exposures to Levels that are As Low As Reasonably Achievable (ALARA)."

FINDING: Site procedures GOP G.1.13 and EH&SP Standard No. 5.1 describe the facility's ALARA responsibilities toward reducing the quantities of solid, liquid, and gaseous waste introduced into the environment, but do not require formalized reporting of environmental ALARA issues. EH&SP Standard No. 5.1, 5.b.5 states: "Each year an ALARA Program Report will be submitted by Health Physics to the manager of EH&SP discussing occupational exposures (as opposed to environmental) including: mean whole body dose equivalent, statistical distribution of mean, site cumulative dose equivalent, internal and external dose breakdown, and comments on ALARA program."

Although the site has taken steps to reduce air and water emissions, and generation of radioactive wastes (I-R-1), no formalized reporting and tracking for statistical trend analysis and possible improvements appear to be taking place for environmental ALARA issues.

3.5.9 Inactive Waste Sites

3.5.9.1 Overview

The purpose of the Inactive Waste Sites (IWS) portion of the Pinellas Plant environmental assessment was to evaluate: 1) PAO and GEND management of inactive waste sites located at the Plant; 2) the management and conduct of studies to respond to the cleanup of these sites; 3) adherence to laws and DOE Orders dealing with inactive waste sites, such as the Comprehensive Emergency Response, Compensation and Liability Act (CERCLA or Superfund), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), RCRA Corrective Action provisions, and DOE 5400.4 (CERCLA); and 4) adherence to the provisions of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which is a stand-alone title of SARA (Title III).

The general approach to the IWS assessment included interviews with PAO and GEND staff, review of EPCRA and environmental restoration documents and records, and tours of the Pinellas Plant. The information collected from these activities was evaluated with respect to Federal and Florida regulations and DOE Orders, as identified in the attached Table 3.5.9-1.

The inactive wastes sites at the Pinellas Plant are presently being investigated through both the DOE Albuquerque Operations Office (AL) Environmental Restoration (ER) Program and a Pinellas Plant-managed program. A report on the initial discovery of inactive waste sites at the Pinellas Plant was produced in December 1987 (IWS-22) under the AL Comprehensive Environmental Assessment and Response Program (CEARP), predecessor to the AL ER Program. Seventeen inactive waste sites that possibly could have adverse impacts on the environment were identified in that report. These sites were evaluated for risk using the Hazard Ranking System. The results of this evaluation were submitted to EPA by the Albuquerque Operations Office. None of the sites scored greater than 28.5, the threshold for inclusion on the National Priorities or Superfund List (NPL). Additional sites were identified during the DOE Headquarters 1987 Environmental Survey (IWS-6). The Pinellas Plant is presently not proposed for nor on the NPL.

Of those inactive waste sites identified in both the CEARP and Environmental Survey studies, the 4.5-Acre Site is being remediated in a Pinellas Plant-managed effort under the guidance of the Florida Department of Environmental Regulation (FDER). The FDER remedial process is similar to the National Contingency Plan (NCP) under CERCLA. To date, a Contamination Assessment, Feasibility Study Plan and Report, and initial Interim Remedial Action Plan and implementation have been conducted at the 4.5-Acre Site, and design of a supplemental Interim Remedial Action is ongoing. Additional discussion of the 4.5-Acre Site is contained in Special Issues (Section 3.5.12.1).

Another 14 identified sites, including the Northeast Site, have been included as solid waste management units (SWMUs) in a draft RCRA permit to be issued by EPA (IWS-5). Pinellas Plant-managed studies have been conducted at the Northeast Site using the FDER NCP-like process. However, because of the impending RCRA permit, in the future this effort at the Northeast Site as well as those at the other SWMUs, will be performed under the RCRA Corrective Action process. Recent reconnaissance studies at some of the SWMUs have been conducted through the AL ER Program.

The Pinellas Plant contains extremely hazardous substances in excess of threshold planning quantities and is therefore subject to the emergency planning requirements of EPCRA. In addition, the Pinellas Plant meets the requirements for toxic chemical release reporting under EPCRA.

Inactive waste site compliance findings deal with insufficient information to implement remedial action and lack of conformance to EPCRA requirements. Best management practices deal with a lack of notification and reporting procedures.

Table 3.5.9-1
List of Applicable Inactive Waste Site
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
CERCLA/SARA	Section 103 - Notices, Penalties	EPA
CERCLA/SARA	Section 120 - Federal Facilities	EPA
RCRA	Section 3004(u) - Continuing Releases at Permitted Facilities	EPA
40 CFR 300	National Contingency Plan (proposed)	EPA
40 CFR 302	Designation, Reportable Quantities, and Notification	EPA
40 CFR 355	Emergency Planning and Notification	EPA
40 CFR 370	Hazardous Chemical Reporting: Community Right-to-Know	EPA
40 CFR 372	Toxic Chemical Release Reporting	EPA
40 CFR 373	Reporting Hazardous Substance Activity When Transferring Federal Real Property (proposed)	EPA
DOE 5400.4	CERCLA Requirements	DOE
DOE 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE 5500.2A	Emergency Notification, Reporting, and Response Levels	DOE
AL 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	AL
Florida Statutes	Chapter 403, Part 4 - Resource Recovery and Management	FDER

Table 3.5.9-1 (Continued)

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
Florida Statutes	Consent Order and Guidance on Corrective Actions for Groundwater Contamination Cases	FDER
EPA	Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final	EPA

3.5.9.2 Compliance Findings

IWS/CF-1 Lack of Adequate Information to Implement a Complete Remedial Action

PERFORMANCE OBJECTIVE: DOE Order 5400.4, CERCLA Requirements, states that DOE shall respond to releases or potentially imminent releases of hazardous substances (e.g., from inactive waste sites) in accordance with CERCLA and the National Contingency Plan (NCP), regardless of whether the facility is on the National Priorities List. The NCP (40 CFR 300), in turn, sets forth specific steps that must be undertaken before implementing a remedy, including remedial investigations and feasibility studies. In addition, guidelines for implementing Florida's Superfund-type program ("Corrective Actions for Ground Water Contamination Cases") specify a process similar to the NCP, including contamination assessments and feasibility studies.

FINDING: The contamination assessment and feasibility study performed for the 4.5-Acre Site do not provide sufficient characterization and analysis on which to base a complete remedial action.

The Pinellas Plant has performed a contamination assessment (IWS-1) and feasibility study (IWS-2) for the 4.5-Acre inactive waste site. They are also in the process of implementing an interim remedial action of pumping and treating the groundwater. However, the studies performed to date do not provide sufficient characterization and analysis, as provided in Florida and Federal regulations and guidance, to screen, select, and implement a remedial action. Examples of these deficiencies include the following:

- o The vertical and horizontal extent and magnitude of contamination, including investigations into effects on the Floridian aquifer, background concentrations, and the degree of plume movement, have not been fully determined. Some of these factors are discussed further in Findings GW/CF-2 and GW/CF-4.
- o The contaminant levels to which the environment should be remediated have not been determined by either considering applicable or relevant and appropriate requirements (ARARs), including FDER-determined Site Rehabilitation Levels (SRLs), or using a risk assessment to arrive at alternate SRLs or SRLs for soil. Future land use, potential contaminant pathways and exposure routes, and sensitive populations were also not addressed.
- o Several factors were not discussed in the evaluation of alternatives, including overall protection of human health and environment; compliance with standards; long- and short-term effectiveness, permanence, and environmental effects; reductions in toxicity, mobility, and volume; and community acceptance.
- o The National Environmental Policy Act (NEPA) process was not considered in the feasibility study, as discussed in Findings NEPA/CF-1 and NEPA/CF-5. Specifically, impacts to the natural and human environment, e.g., geotechnical effects on the adjacent railroad tracks, were not addressed.

- o Formal public participation activities to determine and address public acceptance, interest, and concerns in the feasibility study have not been conducted (see related Finding IWS/CF-2).

The site is aware of some of these deficiencies and plans to address them in remedial studies being planned and undertaken through the AL Environmental Restoration Program. The cause of this finding appears to be inadequate implementation of policies and regulations, partially due to lack of EH&SP staff to provide adequate program management.

IWS/CF-2 Lack of a Developed and Implemented Community Relations Plan

PERFORMANCE OBJECTIVE: DOE Order 5400.4, CERCLA Requirements, states that DOE shall respond to releases or potentially imminent releases of hazardous substances (e.g., from inactive waste sites) in accordance with CERCLA and the National Contingency Plan (NCP), regardless of whether the facility is on the National Priorities List. In addition, DOE Order 5400.4 states that corrective actions carried out under RCRA are not to be inconsistent with the NCP in order for them to satisfy CERCLA requirements. Section 40 CFR 300.67 of the NCP, in turn, requires specified community relations activities, including development and implementation of a community relations plan.

FINDING: The Pinellas Plant has not prepared and implemented a community relations plan for environmental restoration activities in accordance with DOE 5400.4 and 40 CFR 300.67.

The Pinellas Plant has inactive waste sites for which it is conducting remedial activities. Examples are the ongoing activities at the 4.5-Acre and Northeast Sites. A community relations plan has not been prepared and implemented to date for these and other remedial activities. As a result, there is no formal mechanism to ensure that interested parties are made aware of remedial plans, activities, and results at the Pinellas Plant and have input into the remedial process. As an example, there was no public notice or comment period before implementation of the interim remedial action at the 4.5-Acre Site.

The Pinellas Plant is aware of this deficiency and has conducted informal meetings with neighboring developers and communities and has sent copies of previously prepared remedial activity reports and data to the Largo Public Library public reading room (I-IWS-6, IWS-26). However, they have not developed and implemented a formal community relations plan. The apparent cause of this finding is a lack of staff resources and failure to implement policies and guidelines.

IWS/CF-3 Failure to Submit Correct EPCRA 311 Information

PERFORMANCE OBJECTIVE: 40 CFR 370 implements Section 311 of the Emergency Planning and Community Right-to-Know Act (EPCRA). It requires affected facilities, such as the Pinellas Plant, to submit MSDSs or a list of hazardous chemicals and extremely hazardous substances present at the facility in excess of threshold amounts to the Local and State Emergency Planning Commissions (LEPC and SEPC), and the fire department with jurisdiction over the facility.

FINDING: The Pinellas Plant provided incorrect information in its EPCRA Section 311 submittal to the SEPC, LEPC, and local fire department.

On October 16, 1987, the Pinellas Plant submitted lists of extremely hazardous substances and hazardous chemicals to the SEPC, LEPC, and local fire department (IWS-27, 28, and 29) to fulfill the requirements of EPCRA Section 311, as implemented by 40 CFR 370.21. These one-time submittals indicated that the Pinellas Plant does not have any "Hazardous Substances" (i.e., those substances designated in 40 CFR 302) that are present in excess of the reportable threshold of 10,000 pounds. However, 40 CFR 370.21 requires submittal of a list of "Hazardous Chemicals" [i.e., those chemicals defined in 29 CFR 1910.1200(c)] that are in excess of the 10,000 pound threshold, not a list of "Hazardous Substances." In addition, for "Extremely Hazardous Substances," the Plant used a more stringent reporting threshold (1 pound) than the regulations specify (500 pounds or the threshold planning quantity, whichever is less).

Based on the Pinellas Plant Hazardous Chemical Inventory for 1987 (IWS-24), the facility had the following hazardous chemicals onsite in excess of 10,000 pounds that were not listed on the Section 311 submittals: methyl chloroform, methylene chloride, trichloroethylene, epichlorohydrin (1-chloro-2,3-epoxypropane), amyl acetate, hydrochloric acid, nitric acid, and sulfuric acid. They also had the following extremely hazardous substances onsite in quantities less than those implied: formaldehyde, phenol, o-cresol, chlorine, nickel and compounds, and potassium cyanide (I-IWS-18). Providing incorrect Section 311 information results in a misunderstanding by the public of the chemical hazards associated with the Plant through both the overreporting and underreporting of actual quantities onsite.

The site was not aware of this deficiency and, therefore, the cause of this finding appears to be lack of adequate EPCRA training and review of submittals and an unfamiliarity with the requirements of 40 CFR 370.

IWS/CF-4 Failure to Submit a Complete EPA Form R

PERFORMANCE OBJECTIVE: 40 CFR 372 implements Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA). This regulation requires affected facilities, such as the Pinellas Plant, to report on EPA Form R emissions of toxic chemicals that exceed certain threshold amounts.

FINDING: The Pinellas Plant has not submitted complete EPA Form Rs (Toxic Chemical Release Inventory Reporting Form) for 1987 and 1988 in accordance with 40 CFR 372.

The Pinellas Plant has submitted toxic chemical release inventory information for reporting years 1987 and 1988 (IWS-12, IWS-13). The submittal of these forms has been required annually since reporting year 1987. The format the Pinellas Plant has used is similar to EPA Form R and has been generated through an in-house computer program which manages the data bases needed to determine toxic chemical emissions (I-IWS-4).

However, the computer-generated forms the Pinellas Plant submitted do not include Part III, Section 7 information on waste treatment methods and

efficiency. Although plant personnel indicated that this information is not applicable to the Pinellas Plant (I-IWS-12), EPA nonetheless requires the submittal of that portion of the form with "N/A" indicated. In addition, EPA requires that Part IV, a continuation sheet for information in Parts I through III, also be submitted even if it is blank. However, they will not reject the submission if Part IV is not included (I-IWS-17). The site did not supply Part IV for either 1987 or 1988 reporting years.

If Toxic Chemical Release Inventories are not submitted on Form Rs, but rather on some likeness such as the Pinellas Plant's computer-generated form, EPA requires prior approval. For reporting year 1989, the EPA has not rejected submittals without prior approval; however, for reporting year 1990, prior approval by EPA will be necessary. The Pinellas Plant has not sought prior approval for their form.

Site personnel were not aware of these omissions. They indicated that Florida Title III information coordinators had informed them that nonsubmittal of Part III, Section 7 and Part IV is appropriate if no information is to be entered. The causes of this finding appear to be unfamiliarity with the applicable procedures and reliance upon State regulatory personnel to define Federal regulations.

3.5.9.3 Best Management Practice Findings

IWS/BMPF-1 Incomplete Distribution of EPCRA Reports

PERFORMANCE OBJECTIVE: 40 CFR 370 implements Sections 311 and 312 of the Emergency Planning and Community Right-to-Know Act (EPCRA). It requires affected facilities, such as the Pinellas Plant, to submit a list and Tier I/Tier II inventory of hazardous chemicals and extremely hazardous substances present at the facility in excess of threshold amounts to the Local and State Emergency Planning Commissions (LEPC and SEPC), and the fire department with jurisdiction over the facility.

FINDING: The Pinellas Plant Fire Brigade has not been sent a list of hazardous chemicals and extremely hazardous substances or the EPA Tier II Form.

The Pinellas Plant has prepared a list of hazardous chemicals and extremely hazardous substances and Tier II Forms (IWS-23, 24, 27, 28, and 29) and has sent them to the SEPC, LEPC, and Seminole Fire Department, as required by regulation (see related Finding IWS/CF-3). However, the Pinellas Plant Fire Brigade has not been sent copies. The Seminole Fire Department has primary responsibility for fire and emergency response although the Pinellas Plant Fire Brigade is often the first responder. Although regulations do not require the plant to send the Fire Brigade the forms, the data they contain provide information on amounts, locations, and characteristics of hazardous chemicals at the facility, and one of its purposes is to assist in fire and emergency response. Without this data, the Fire Brigade's responses may not be appropriate for the conditions. Fire Brigade personnel indicated, upon review of the Tier II Forms during the Tiger Team Assessment, that the information would be helpful to their response efforts and is not contained in any of their other records (I-IWS-30).

The cause of this finding appears to be that the site may not have assessed the risk of not providing this information to the Pinellas Plant Fire Brigade.

IWS/BMPF-2 Incomplete Spill Reporting Procedure

PERFORMANCE OBJECTIVE: DOE Orders 5484.1 and 5500.2A require that spills of hazardous substances in excess of reportable quantities be reported to the DOE Emergency Operations Center (EOC).

FINDING: Spill reporting procedures for hazardous substances are documented in the Pinellas Plant Contingency Plan for the Hazardous Waste Management Facility. However, they do not fully describe all the necessary procedures and contacts in the event of a reportable quantity spill.

Within the Plant contingency plan are procedures for notification in the event of a hazardous substance spill. Although these procedures contain several of the contacts that need to be made after a CERCLA Section 103 or SARA Title III Section 304 reportable spill, including the National Response Center and the Local and State Emergency Planning Commissions, there are no descriptions of the chain of contacts for notifying the DOE EOC (GEND to PAO to AL to DOE EOC).

The cause of this finding appears to be that the policy for reporting spills, as stated in the Pinellas Plant Contingency Plan, is incomplete.

3.5.10 National Environmental Policy Act

3.5.10.1 Overview

The purpose of the National Environmental Policy Act (NEPA) portion of the Tiger Team Assessment at the Pinellas Plant was to: 1) evaluate the Pinellas Area Office (PAO) and General Electric Neutron Devices (GEND) NEPA management structure and NEPA review processes; 2) identify inappropriate procedures or inadequate NEPA documentation; and 3) evaluate compliance with the NEPA, Council on Environmental Quality (CEQ) regulations, and DOE NEPA Guidelines, Orders, and Memoranda. Table 3.5.10-1 lists applicable regulations and/or requirements used to evaluate NEPA compliance.

The general approach to the NEPA assessment included interviews, document review, and onsite verification. Interviews were conducted with staff responsible for NEPA compliance, the public relations staff, the classification officer, and others. Documents were reviewed for adequacy in relation to (1) compliance with environmental laws, regulations, and guidelines; and (2) use for reference or tiering.

Oversight responsibility for the NEPA program for the site is with the Albuquerque Operations Office (AL).

Documentation related to NEPA for the site consists of a 1983 site-wide Environmental Assessment (EA) and approximately 38 Action Description Memoranda (ADMs).

The NEPA portion of the Tiger Team Assessment resulted in five compliance findings dealing with inconsistencies with DOE NEPA guidance and procedures, determination and maintenance of appropriate NEPA documentation, and deficiencies in the site-wide EA. In addition, the assessment identified one best management finding dealing with the site's approach to NEPA compliance.

In general, limited staffing at PAO and GEND results in low priority being given to NEPA compliance relative to other environmental regulations and requirements.

Table 3.5.10-1
List of Applicable National Environmental Policy Act
Regulations/Requirements/Guidelines

<u>Regulations/ Requirements/ Guidelines</u>	<u>Section/Title</u>	<u>Authority</u>
P.L. 91-90	National Environmental Policy Act (NEPA)	U.S. Congress
40 CFR 1500-1508	Regulations for Implementing the Procedural Requirements of NEPA	Council on Environmental Quality (CEQ)
10 CFR 1021	Compliance with the National Environmental Policy Act	DOE
52 FR 47662-47670	DOE Compliance with the National Environmental Policy Act (NEPA); amendments to the DOE NEPA Guidelines	DOE
DOE 5440.1C	NEPA	DOE
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements (CERCLA RI/FS and NEPA)	DOE
N/A	DOE Environmental Compliance Guide (1981)	DOE
N/A	DOE NEPA Compliance Guide (Draft) 1988	DOE
N/A	NEPA Guidance related to Memorandum-to-file and Categorical Exclusion (March 25, 1988)	DOE

3.5.10.2 Compliance Findings

NEPA/CF-1 Lack of NEPA Compliance Strategy

PERFORMANCE OBJECTIVE: The Council on Environmental Quality (CEQ) regulations (40 CFR 1501.2), Section A.1 of the DOE NEPA Guidelines (52 CFR 47662), and DOE Order 5440.1C(6) (c) (1) require that DOE integrate the NEPA process at the earliest possible time to ensure that planning and decisions reflect environmental values to avoid delays later in the process. DOE Order 4700.1 Attachment II - Part F(3) recommends that appropriate NEPA documentation be completed prior to initiation of detailed design.

FINDING: The site lacks a coordinated strategy to ensure compliance with NEPA. This fosters significant confusion about overall NEPA requirements, particularly with regard to which actions require NEPA analysis and the correct timing of such analysis. There is no formal procedure for NEPA review of proposed actions (i.e., a review committee or environmental checklists).

The need for NEPA documentation is based on AL guidance that ADMs be done for all line item submittals and projects that have the potential for any environmental consequences. However, at present this AL guidance is inconsistent with DOE-HQ guidance which specifies that an ADM is done only if a proposed action does not fit clearly into one of the classes of actions listed in Section D of the DOE NEPA Guidelines, and if it fails the Memorandum To File (MTF) test of "clearly insignificant" (see NEPA/CF-4). Although GEND is responsible for preparing ADMs, there are no written NEPA review procedures in the GEND GOPs and guidance from DOE is primarily verbal, inconsistent, and confusing (I-N-7 and 8).

At the site, decisions on which General Plant Projects (GPP) require ADMs are made during informal discussions between PAO and GEND staff. At present, PAO/GEND do not have the authority to make these determinations. However, AL guidance was being revised to give the Area Offices the authority to categorically exclude (with one exception) proposed actions per Section D of the DOE NEPA Guidelines (52 CFR 47662). These categorical exclusions must be documented (I-N-22). As AL is aware, SEN-15-90 (issued February 5, 1990) does not allow delegation to the Area Offices.

Because of the lack of a coordinated strategy, projects have been undertaken at the Pinellas Plant without NEPA determination and prior to completion of the NEPA review process (i.e., before the required NEPA documents were prepared). No NEPA documentation or determinations were found for two projects: (1) construction in 1986 of three above-ground health physics tanks, and (2) decontamination and disposal in 1988 of the three underground health physics tanks. In addition, NEPA was not considered in the feasibility study for the remediation of the 4.5 acre site.

Instances in which NEPA was not factored into the decision making process in a timely manner include the Childcare/Partnership School (N-38) and the Security Center (N-37). In both cases, although NEPA determinations are lacking, construction is completed for the Security Center (completed in 1987) and underway for the school (construction began April/May 1989). Moreover, based on lists of FY 90 projects (N-41), it appears that for the proposed "kennels" NEPA review was not initiated at the conceptual design phase.

There is a long history of failure at the Pinellas Plant to incorporate NEPA into decision making early on. This is coupled with a lack of understanding of NEPA, its requirements and its potential benefits, especially the early stages of project planning and decision making. Another apparent cause is lack of oversight by AL and HQ.

NEPA/CF-2 Inadequate Tracking and Record Keeping for NEPA Documentation

PERFORMANCE OBJECTIVE: A system should exist for accurate and timely tracking of project NEPA review and documentation as it moves between GEND, PAO, and ALO (DOE Order 4700.1 and DOE Order 5440.1C). Adequate records should be kept to document compliance with NEPA.

FINDING: Project NEPA review and documentation for the Pinellas Plant is not adequately tracked. The central filing system is inadequate and there is no database to track information on the NEPA compliance status of past, present, and proposed projects. Record keeping by GEND and PAO is not adequate to demonstrate past or present compliance with NEPA requirements.

For instance, neither GEND, PAO, nor AL has files to show that a Finding of No Significant Impact (FONSI) was ever prepared for the 1983 site EA; however, PAO files do indicate that a FONSI from PAO was requested by Defense Programs - HQ. Furthermore, no record at DOE-HQ could be located which indicated that DP had requested approval of the 1983 EA. Had this occurred, the Assistant Secretary for Environment (now EH-1) would have issued a FONSI, approving the EA. At the time of the Tiger Team Assessment, NEPA documentation for projects was lacking in the PAO and GEND NEPA files. The GEND NEPA files lacked one MTF (N-23). The PAO files had seven completed NEPA documents (i.e., ADMs plus the associated MTFs or other NEPA determinations: N-2, 24 through 28, and 34). Also, in the PAO files, there was 1 ADM without a MTF (N-38), 16 MTFs or other NEPA determinations without ADMs (N-1, 3 through 5, 18 through 23, 29, 30, 32, 33, 35, 36), and 14 projects (N-6 through 17, 31, and 37) for which there was no NEPA documentation at all.

We found that projects may have more than one name, lack unique numbers, and may have more than one NEPA review and determination. This creates confusion, duplication of effort, inability to effectively follow the NEPA status of a project, and results in the records not being auditable.

The lack of a clear system for determining the NEPA status of projects in the review and approval chain constitutes an impediment to NEPA compliance for Pinellas projects. Poor oversight of this process by all parties involved (PAO, AL, and HQ) is the fundamental cause of these record keeping and tracking deficiencies.

NEPA/CF-3 Deficiencies in the 1983 Site-Wide Environmental Assessment

PERFORMANCE OBJECTIVE: All EAs must satisfy certain minimum procedural and technical requirements set forth in CEQ Regulations (40 CFR 1500 et seq.), the DOE Guidelines implementing NEPA (52 FR 47622), and the Draft DOE NEPA Compliance Guide (October 1988).

FINDING: The 1983 Pinellas Plant Environmental Assessment (EA) is outdated and has a number of procedural and technical inadequacies. Deficiencies identified during the course of this review include the following:

- o A supporting Finding of No Significant Impact (FONSI) was absent. The lack of an approved site-wide EA makes using the categorical exclusion that relies on previous documentation unacceptable. [Twenty-two of 36 ADMs cited (i.e., tiered from) the EA as a basis for this categorical exclusion.] Thus, for proposed projects that are not otherwise categorically excluded or for which an MTF is not appropriate, the current EA is not valid for supporting a categorical exclusion or for other tiering purposes.
- o The EA lacks archaeological field survey results and consultation with the State Historic Preservation Officer (SHPO) per the requirements of the National Historic Preservation Act.
- o The U.S. Fish and Wildlife Service gave a listing of threatened and endangered species that may be present on site over the telephone. The EA lacks evidence of a field survey to determine the presence/absence of these species. Neither Federally listed or proposed threatened and endangered plant species, nor State "species of special concern," are mentioned in the EA.
- o The EA lacks a wetlands assessment in accordance with 10 CFR 1022.

Moreover, because of changes in site facilities, urban growth, environmental regulations, and DOE requirements since the 1983 EA, the following items have not been analyzed:

- o The fast population growth around the plant during the last decade may have altered some of the basic assumptions used or conclusions reached in the EA (e.g., water demand and accident analysis).
- o A risk assessment (including a severe accident analysis) has not been included in the EA for the addition of a school/day care center on the plant site.
- o DOE 5400.4 requires the integration of NEPA and CERCLA. DOE-HQ is likewise advising plant sites to integrate RCRA and NEPA; this integration is implied in the CEQ regulations [1500.2 (c) and 1500.4 (k)] as well. The 14 Solid Waste Management Units (SWMUs) at the Pinellas Plant that have been identified since the EA was published have not been addressed.
- o Recent DOE-HQ guidance (N-52) requires that radiological and non-radiological impacts of normal operations and potential accidents be assessed in NEPA documentation. The EA does not address non-radiological impacts to workers.

PAO and GEND staff apparently were not aware of the proper requirements for preparing NEPA documents (e.g., FONSI) and for complying with applicable regulations for proposed actions at Pinellas (e.g., archaeological survey and SHPO consultation, threatened and endangered species survey, wetlands

assessment). This is most likely due to lack of knowledge and training in the NEPA compliance process and lack of oversight by AL and HQ.

NEPA/CF-4 Inappropriate NEPA Review Process by the Albuquerque Operations Office

PERFORMANCE OBJECTIVE: Section D of the DOE NEPA Guidelines specifies 50 categorical exclusions and 23 actions requiring environmental assessments (EAs) and environmental impact statements (EISs). The Responsible Supervisory Official (RSO) must consider the full range of possible exclusions, as well as actions requiring an EA or EIS listed in Section D of the Guidelines (52 FR 47552), as specified in the DOE 5440.1C.

FINDING: The NEPA review process and determinations used by the AL does not include the full range of NEPA review categories listed in the DOE NEPA Guidelines, as specified in DOE 5440.1C. The AL 5440.1B (NEPA) (November 12, 1982) (N-42) has not been updated to reflect the April 9, 1985 DOE 5440.1C (NEPA) and the change in AL procedures announced in a December 23, 1987 memorandum (N-46).

This finding is based on review of all AL NEPA determinations and supporting Action Description Memoranda (ADMs) in the Pinellas Area Office files, contractor files and DOE-HQ files for the Pinellas Plant (N-1 through N-38).

AL had been using a form for NEPA review that only includes three categories: "clearly insignificant" (as documented in a MTF); "substantially the same as actions previously evaluated in existing NEPA documentation and determined to be insignificant. Therefore, further NEPA documentation is not required."; and "AL approval authority exceeded (the proposed action must be forwarded to DOE-HQ for NEPA determination)." This scope of determinations clearly does not allow for a full consideration of NEPA review, as specified in the performance objective.

AL began using a new form in October 1989 that has been applied to five Pinellas Plant projects (N-32 through N-36). The form, which now refers to a "categorical exclusion listed in Section D of the DOE NEPA Guidelines," is an improvement, but two problems still remain. The form should also refer to EAs and EISs listed in Section D and should direct that the specific categorical exclusion, EA, or EIS selected from Section D be identified.

In addition, AL requires the Pinellas Plant to document projects using an ADM. This usage of an ADM is inconsistent with the usage of an ADM specified in the DOE Compliance Guide (N-43 and N-56) and leads to confusion. The use of a different term for this document would eliminate the confusion.

The cause for this finding is that AL procedures are not consistent with DOE-HQ procedures.

NEPA/CF-5 Inappropriate NEPA Determinations and Inadequate Documentation

PERFORMANCE OBJECTIVE: The NEPA Guidelines (52 FR 47662) and the Draft DOE NEPA Compliance Guide (October 1988) specify the criteria DOE is to use in determining the level of NEPA documentation to be prepared.

FINDING: The NEPA documentation prepared by the Pinellas Plant (under the direction of AL) and the determinations made by AL for the Pinellas Plant are not always appropriate.

The plant prepares "Action Description Memoranda" or "ADMs" for proposed actions which AL uses to make NEPA determinations. The use of this term is inconsistent with DOE-HQ usage, as explained in NEPA/CF-1. Therefore, we distinguish between the HQ ADM and the AL "ADM" by using quotation marks.

The Tiger Team used the AL NEPA determinations as the basis of our evaluation. Of 36 MTFs, categorical exclusions, and "ADMs," prepared since 1984, four were not appropriate and two lacked sufficient information to permit an independent determination. Five determinations were incomplete and could not be fully evaluated. These five "ADMs" (N-1 through N-5), were determined by AL not to be "major federal actions significantly affecting the human environment." This means only that the actions do not require an EIS, however, there is no indication of the NEPA categories into which the proposed actions fit (i.e., categorical exclusions per section D of the DOE NEPA Guidelines, clearly insignificant and thus eligible for a Memo-to-File, or in need of further analysis or HQ determination of NEPA status).

Of the four determinations which were inappropriate, three (N-17, N-29 and N-30) were MTFs which would more appropriately have been categorical exclusions. They involved cafeteria equipment and building exhaust upgrades and weapons manufacture within an existing building. The fourth document, the ADM for the 4.5 Acre Remedial Action Site (N-34) fails the test of "clearly insignificant" necessary for the RSO to issue an MTF. The RSO required the Pinellas Plant to provide additional information and analysis on the effects of air strippers to area air quality (the area airshed has been designated non-attainment for ozone). These factors clearly indicate that the revised ADM should be submitted to HQ for a determination of whether an EA or an MTF is appropriate (N-56).

The lack of understanding and training on DOE NEPA requirements contributes to the inability to review project descriptions and render accurate determinations. The lack of oversight by AL and DOE-HQ also contributes to the problem.

3.5.10.3 Best Management Practice Findings

NEPA/BMPF-1 Inattention to NEPA Compliance at Pinellas Plant

PERFORMANCE OBJECTIVE: Compliance with NEPA should receive the same emphasis as compliance with other environmental statutes.

FINDING: PAO and GEND have given little attention to compliance with NEPA relative to other environmental laws and regulations (I-N-7 and I-N-10).

As good management practice, staff members responsible for initiating actions, for associated NEPA review, and for oversight should have knowledge of the most recent guidance from EH-HQ and be adequately trained in NEPA compliance requirements. Interviews with PAO and GEND staff showed the following:

- o GEND has no written NEPA procedures.
- o Existing staff do not have adequate time to devote to NEPA compliance.
- o No training in the NEPA process has occurred for GEND staff.
- o PAO and GEND managers responsible for the oversight of NEPA planning are not fully knowledgeable about CEQ or DOE requirements concerning implementation of NEPA or DOE's NEPA Compliance Guide.

DOE-HQ, AL, PAO, and GEND all share in the failure to place adequate emphasis on NEPA at the site. Factors that contribute to this include lack of staff and lack of knowledge and experience with NEPA, especially as to the beneficial role NEPA can play in guiding the planning process for a facility, project, or program.

3.5.11 Environmental Monitoring and Surveillance

3.5.11.1 Overview

The environmental monitoring and surveillance portion of the Pinellas Plant Tiger Team Assessment included all activities associated with the management of environmental monitoring and surveillance activities, including effluent sampling and analysis, monitoring equipment configuration, operation and maintenance of monitoring equipment, and compliance activities performed under the general environmental protection requirements of DOE 5484.1b and DOE 5400.1. Activities associated with the development of the Annual Environmental Report were also reviewed during the environmental monitoring and surveillance portion of the assessment.

The general approach to the environmental monitoring and surveillance portion of the assessment included observation of sampling routines, sampling equipment, monitoring systems, control devices, and analytical laboratories. Personnel responsible for the environmental monitoring programs, media sampling, sample analysis, dose assessment evaluation, preparation of the annual monitoring report, and QA/QC activities were interviewed. Documentation associated with the environmental monitoring programs that was reviewed included, but was not limited to, sampling procedures, analytical procedures, instrument calibration procedures, monitoring equipment configuration, operation and maintenance procedures, and the Annual Environmental Report.

The GEND organization at the Pinellas Plant with primary responsibility for environmental monitoring and surveillance is Environmental, Health, and Safety Programs (EH&SP). EH&SP also has primary responsibility for developing the "Pinellas Plant Site Environmental Report," which is the annual monitoring report required under DOE 5400.1. EH&SP and the Waste Management Department are responsible for ensuring that operations at the Pinellas Plant comply with applicable environmental requirements. Sampling and analysis programs concerning the 4.5-Acre site and the Northeast site are performed by contractors and overseen by EH&SP. Onsite and offsite ambient air monitors are operated by Westinghouse, Geotechnical and Environmental Services, Tampa, Florida. Liquid effluent sampling is performed by utility operations personnel and the analyses are performed offsite at an independent State of Florida-certified laboratory and onsite in the Environmental Chemistry Laboratory.

Findings in this section are comprised of information found in media-specific findings in their respective sections of the environmental assessment report. This information was employed in the findings in this section to support observations concerning generic environmental monitoring and surveillance conditions at the Pinellas Plant.

Environmental monitoring and surveillance activities at the Pinellas Plant are generally performed without sufficient staffing resources, guidance, or review. This observation applies to all environmental media subject to monitoring and surveillance. Findings include the following:

- o The Plant is unable to comply with implementation deadlines in DOE 5400.1.
- o Data in the annual environmental report are of unknown quality and not reported as required.
- o Compliance with sample acquisition, monitoring, sample handling, operating procedure review, and auditing procedures is inconsistent and, in certain cases, nonexistent.

3.5.11.2 Compliance Findings

EMS/CF-1 Anticipated Noncompliance with DOE 5400.1

PERFORMANCE OBJECTIVE: DOE Order 5400.1 calls for the completion of a Groundwater Protection Management Program Plan, an Environmental Monitoring Plan, and development of a Meteorological Information/Monitoring Program by certain specified dates.

FINDING: Based on current planning and budgeting, GEND has indicated that the Groundwater Protection Management Program Plan, Environmental Monitoring Plan, and the Meteorological Information/Monitoring Program will not be developed by the dates specified in DOE 5400.1.

The Groundwater Protection Management Program Plan is to be completed by May 9, 1990. GEND has indicated that this plan will not be completed by this date (IGW-05). An Environmental Monitoring Plan is to be completed by November 9, 1991. GEND has indicated that based on current funding estimates this plan will not be completed by this date (I-QA-5). A Meteorological Information/Monitoring Program is to be developed and implemented by November 9, 1991. GEND has indicated that funding for the required equipment is not scheduled until FY 92 (I-A-7).

The cause for the anticipated noncompliance with these requirements of DOE 5400.1 is a lack of staffing resources.

EMS/CF-2 Deficiencies in the Annual Environmental Reports

PERFORMANCE OBJECTIVE: DOE Orders 5484.1 and 5400.1 require the preparation of an environmental monitoring report annually. Section III of the Order states "Quality Assurance with respect to sampling and analytical procedures, data processing, and reporting shall be an integral part of the program." Information concerning the precision of the data is stipulated in the Order.

FINDING: Data reported in the Pinellas Plant Site Environmental Report for Calendar Year 1988 are of unknown accuracy and precision and do not meet the requirements of DOE 5484.1.

GEND is reporting cyanide and mercury data in the annual environmental report that is of unknown quality and defensibility. The cyanide and mercury data are produced by an independent offsite laboratory that is certified by the State of Florida. GEND does not require that quality assurance/quality control (QA/QC) information, such as accuracy and precision, associated with

the cyanide and mercury analyses be provided upon data reporting (I-QA-5). Without the QA/QC information the quality of the data is unknown.

Radiological data is being reported in the annual environmental report without the required two standard deviation (sigma) limits. Reported data for tritium in environmental samples in Tables 2-2, 5-1, 5-2, and 5-3 do not list associated standard deviations; however, Quality Assurance Program data for radionuclides in quality control reference samples presented in Tables 7-1 and 7-2 do report standard deviations. GEND laboratory personnel are generating this data as part of their analyses.

GEND is not reporting data from all environmental monitoring samples acquired from the effluent to the POTW stream. Data from three out of the four weekly samples are not reported or otherwise included in the annual environmental monitoring report. See Surface Water Finding SW/CF-1 for more details.

A lack of understanding of QA/QC requirements and the reporting requirements of DOE 5484.1 is the basis of this finding.

EMS/CF-3 Inadequate Oversight, Compliance, and Consistency with Respect to Environmental Monitoring and Surveillance Procedures

PERFORMANCE OBJECTIVE: Environmental Health & Safety Program (EH&SP) Environmental Monitoring Procedures stipulate required procedures for the sampling and analysis of environmental monitoring and surveillance samples. They also specify the maintenance and operation of environmental monitoring and surveillance equipment, auditing and appraisal of environmental monitoring and surveillance activities, and the annual review of environmental monitoring and surveillance procedures.

FINDING: Compliance with sample acquisition, and surveillance, sample handling, operating procedure review, and auditing procedures is inconsistent and, in certain areas, nonexistent. Procedures for similar activities, such as onsite and offsite surface water sampling are inconsistent with each other and, in general, environmental monitoring and surveillance procedures lack specific quality assurance guidance.

Team members of the Environmental Assessment Subteam identified the following as indicative of inconsistency and noncompliance with EH&SP procedures:

- o EH&SP procedures EM 4.01, Onsite Surface Water Sampling For Tritium, and EM 4.02, Offsite Surface Water Sampling For Tritium, are inconsistent with each other. See Surface Water Finding SW/CF-6 for more details.
- o Section 7 of the Quality Program Plan for the Environmental Chemistry Laboratory in the Instrumental/Environmental Chemistry Unit (7/21/89) states that an outside or offsite contractor laboratory will use established EPA or other agency procedures; have an established, internal QA program; participate in an external QA program such as those sponsored by the DOE Environmental Monitoring Laboratory; that QA samples will be supplied with the monitoring samples at a rate of 10 percent; and that these requirements will be specified on the General Purchase

Requirement (GPR). The Quality Program Plan (QPP) for the Environmental Protection Program EM-7.01, Section 7.5 (5/23/89) states that EH&SP will issue a completed GPR for laboratory services outside of the plant and that the GPR will state the analysis and/or sampling required. The QA requirements for offsite laboratories are inconsistent between these Quality Program Plans.

- o Audits and appraisals of the onsite environmental chemistry laboratory and onsite sampling activities that are required by Section 18.0 of the Quality Program Plan for the Environmental Protection Program have not been performed (I-QA-5, I-QA-2). Although audits and appraisals of the onsite lab are required, audits and appraisals of the offsite contractor laboratory are not required. See Quality Assurance Finding QA/CF-1 for more details.
- o Chain-of-Custody procedures, as outlined in EM-6.01, Chain-of-Custody Procedure for Regulatory Compliance Samples and Environmental Evaluation Samples, are not followed for samples delivered to the onsite environmental chemistry laboratory on weekends. See Quality Assurance Finding QA/CF-2 for more details.
- o Formal documentation of the annual review of environmental monitoring procedures, required by Section 18 of EM-7.01, Quality Program Plan (QPP) for the Environmental Protection Program, was not available for the following procedures:
 - EM-2.01 Plutonium Stack Releases - Building 400,
 - EM-3.01 Tritium in Process Wastewaters,
 - EM-3.03 Industrial Wastewater Neutralization Facility Sludge Measurement,
 - EM-4.01 Tritium in Onsite Surface Waters,
 - EM-5.01 Plutonium in Soil - On and Offsite Environmental Monitoring, and
 - EM-6.01 Chain-of-Custody Procedure for Regulatory Compliance Samples and Environmental Evaluation Samples.

Although site personnel indicated procedures EM-2.01, 4.01, 5.01, and 6.01 were reviewed within the last year, auditable verification was not possible. Two procedures (EM-3.01 and 3.03) were not reviewed within the last year. Failure to document reviews can lead to the validity of data being questioned. Site personnel indicated that initialing and dating of a working copy of these procedures would take place:

- o EM-1.03, Tritium in Air - On and Offsite Environmental Monitoring, and EM-2.02, Plutonium in Air - On and Offsite Environmental Monitoring, require servicing of offsite monitoring equipment on Thursdays; the monitoring equipment was serviced on Wednesday during the environmental assessment. See Air Finding A/BMPF-1 for more details.

- o The tritium sampling train at the Walsingham Station was erroneously configured. A contributing cause for this error was that a procedure describing the correct configuration does not exist.
- o None of the environmental monitoring procedures reviewed with the exception of EM-7.01, contains quality assurance/quality control (QA/QC) requirements.

Non-conformance with procedures and the absence of QA/QC requirements from procedures puts the validity and defensibility of environmental monitoring and surveillance data generated by GEND in question.

The cause of these problems is three-fold: lack of training for sampling personnel on procedures; lack of staff resources to enforce the requirements of GEND procedures; and deficiencies in guidance for producing environmental monitoring procedures.

3.5.11.3 Best Management Practice Findings

None.

3.5.12 Special Issues

3.5.12.1 4.5-Acre Site

An important waste management issue at the Pinellas Plant is the on-going remedial activities at the 4.5-Acre Site. This area is adjacent to the plant at the northwest corner and is presently owned by a private party. In approximately 1962, drums filled with waste resin from Pinellas Plant operations were reportedly disposed of at the 4.5-Acre Site, which was then part of the plant property. Disposal consisted of excavating a hole with a backhoe, placing a load of about 20 drums in the hole, and backfilling. A new hole was used for each load. The land was subsequently sold to a private party in 1972.

During interviews with employees in 1984 to identify past waste activities at the Pinellas Plant, the possible existence of a drum disposal area at the 4.5-Acre Site was noted. In 1985, DOE entered into a land-use agreement with the landowner and commissioned the United States Geological Survey (USGS) to perform an electromagnetic survey of the 4.5-Acre Site to determine whether drums were present. During devegetation of the site for that study, a partially exposed drum was discovered to contain methylene chloride. The subsequent survey indicated several magnetic anomalies.

More detailed surveys were performed and in June 1985, clean-up operations took place resulting in the removal of 83 drums (34 with sufficient volumes to be sampled) and a total of 303 tons of contaminated waste (contaminated soil, solidified drum contents, crushed drums, and other trash). Subsequent to the clean-up, additional studies were performed to characterize the site.

In mid to late 1985, discussions were held with FDER regarding the contents of a proposed consent order and the steps the plant would need to take to remediate the site. The State typically issues consent orders in these types of cases and has a model order for such purposes (I-IWS-7). However, consent orders for Federal facilities are generally not issued by the State (I-IWS-15), since Federal agencies with installations located in Florida (mainly Department of Defense) have programs in place to remediate inactive waste sites and have shown good faith in implementing them. In these cases, the State interacts with Federal facilities in an advise and consent process. The model consent order is an enforceable agreement which provides a framework for the remedial process ("Corrective Action for Ground Water Contamination") and schedules for this process. Since the 4.5-Acre Site was confirmed to have contamination, FDER indicated that they would require DOE to implement their "Corrective Action" process, including defining the contaminant plume, prior to their approval of further remediation. This process includes the conduct of contamination assessments, feasibility studies, and remedial action plans.

A consent order was not entered into by the State, DOE, and the property owner, apparently because of DOE's unresponsiveness during negotiations. However, because the Pinellas Plant had shown good-faith effort in moving forward with remediation, the State did not press the issue of a consent order (I-IWS-20). The Pinellas Plant began implementing the State's Corrective Action process in early 1986 and has been conducting corrective action studies since that time without an executed consent order. Nonetheless, the studies

have been conducted in accordance with the State's process and the plant has sought and received State approval at the appropriate milestones. Examples include the Contamination Assessment Report and Feasibility Study Work Plan, drafts of which were submitted to the State in August 1986. Comments on the documents were received from the State in November 1986 and DOE responses were sent to FDER in January 1987. These documents were approved by the State in March 1987.

A Feasibility Study was then prepared and submitted to the State in October 1987. Because the contaminant plume had moved offsite, an interim remedial action was proposed and a plan was provided to the State also in October 1987. FDER comments and approval of the Feasibility Study were given in November 1987 and their comments and conceptual approval of the Interim Remedial Action Plan (IRAP) were provided in January 1988. The site responded to the IRAP comments in March 1988.

After negotiations with the landowner on a new land-use agreement and with the Pinellas County Sewer System on discharges of contaminated groundwater, the Pinellas Plant received approval on the IRAP from FDER in September 1988. Interim remedial action of pump and discharge was begun in December 1988 but was halted in January 1989 because levels of methylene chloride in the discharge were much higher than anticipated based on existing studies (see Finding IWS/CF-1). Since then, a revised interim remedial action plan of pumping and treating onsite was submitted to, and approval was received from, the State (September 1989 and November 1989, respectively). The Pinellas Plant anticipates that the revised interim remedial action will go on-line in the spring of 1990 and it may result in achieving as yet undetermined clean-up standards in a minimum of 2 years. The site then expects to submit closure plans to FDER and conduct closure monitoring over a 2-year period at a minimum. Finally, the site plans to submit closure results to the State and seek State approval of project completion (IWS-30, I-IWS-6).

In summary, corrective actions at the 4.5-Acre Site have been conducted with FDER advice and approval and have proceeded within the framework of the State model consent order and guidance. Nonetheless, the Tiger Team has a concern that this process has not been performed under a formal consent order. Such an order would commit DOE to an administratively enforceable remedial action to specified clean-up standards in a set time frame and would protect the extent of DOE's liability.

However, with or without a consent order, the State will not approve final closure until it is demonstrated to them that remediation has occurred to the appropriate clean-up standards. This approval process is described in the model consent order. Therefore, to assure that a formal commitment is made by DOE to the remediation of the 4.5-Acre Site to agreed-upon clean-up levels, and that the method for achieving and agreeing to final closure is formally set, the Tiger Team believes that the need for a consent order should be evaluated at the time of State acceptance of a final remedial action plan or closure plan. In addition, since remedial action, closure, and post-closure monitoring and approval activities are anticipated to extend at least 5 years into the future, a significantly higher degree of institutional control would be provided by reacquiring the property.

4.0 SAFETY AND HEALTH ASSESSMENT

4.1 Purpose

The purpose of the Safety and Health (S&H) Subteam appraisal was to assess the effectiveness of representative safety and health programs at the GEND Pinellas Plant through the evaluation of activities at selected facilities and in selected safety disciplines.

4.2 Scope

The S&H portion of the Tiger Team Assessment was a Technical Safety Appraisal (TSA). The TSA was performed concurrently with the Tiger Team Assessment effort. The processes utilized in the TSA program were employed to perform the assessment of the health and safety program at the GEND Pinellas Plant.

Within the S&H programs of the DOE prime contractor, performance in the following disciplines was appraised: Organization and Administration, Operations, Maintenance, Training and Certification, Auxiliary Systems, Technical Support, Site/Facility Safety Review, Emergency Preparedness, Radiological Protection, Industrial Hygiene, Occupational Safety, Fire Protection, Quality Verification, Safety/Security Interface, and Medical Services.

4.3 Approach

The S&H Subteam evaluation was conducted during the period January 15 -31, 1990. The S&H evaluation was conducted by a team of experts assembled by the Office of the Deputy Assistant Secretary for Safety, Health and Quality Assurance (DAS, SHQA), Office of Safety Appraisals (OSA). Team members consisted of DOE Headquarters staff, employees of DOE contractors, and outside consultants. The S&H Subteam was led by a Team Leader from the OSA. Guidance and direction was provided by a member of the DAS, SHQA senior management. A list is provided in Section 4.9 of the team members and their areas of responsibility; biographical sketches are provided in Appendix A-2 for each team member.

The S&H evaluation was operationally focused. As such, in terms of safety, health, and quality verification, the site and selected facilities were appraised relative to operations, and the condition of equipment and facilities. A TSA is designed to be an appraisal of an operating facility. This approach is based upon the assumption that the facility and its equipment have been appropriately designed, constructed, and tested, and that safety reviews or the Safety Analysis Reports (SARs) adequately evaluate the risks presented by the operation of the facility. This evaluation addresses whether current operations are being conducted within the operational safety procedures established for specific facilities and activities.

The S&H Subteam's activities were guided by the performance objectives and supporting criteria contained in the "Performance Objective and Criteria for Technical Safety Appraisals at Department of Energy Facilities and Sites," January 1990. The findings identified by the S&H Subteam were obtained in three ways: (1) observing routine operations, emergency exercises, and the physical condition of the site and facilities; (2) interviews with management,

staff, operators, and craft personnel; and (3) reviewing policy statements, records, procedures, and other relevant documents. A concern addresses a situation that in the judgment of the S&H Subteam: (1) reflected less than full compliance with a DOE safety and health requirement or mandatory safety standard; (2) threatened to compromise safe operation; or (3) if properly addressed would substantially enhance the excellence of that particular situation even though that part of the operation was judged to have a currently acceptable margin of safety. Because of this last category for addressing the excellence of the operation, more concerns are reported than would result from a strictly compliance-oriented appraisal.

As a result of the individual findings, 93 concerns are identified in this section of the report. The findings which support each concern are listed immediately in the front of the concern. All of the concerns were judged to be Category III, except Concerns QV.3-2, TS.6-6, OS.5-1, and FP.2-1, which were judged to be Category II. The category rating, potential hazard, and level of noncompliance for each concern were determined by using the criteria contained in Section 4.7.

Drawing upon the extensive experience of its members, the S&H Subteam has made an effort to identify some of the responsible factors in each statement of concern. However, the S&H Subteam recognizes that this effort is at best imperfect due to its relative unfamiliarity with the details of the contractors' overall operations. Therefore, the S&H Subteam believes that the contractors should consider the findings, and even the statements of concern, as possibly symptomatic of some set of deeper root causes and should search out and correct those root causes so that there will be reasonable assurance that improvements in the safety of the operation will be sustained.

4.4 Safety and Health Assessment Summary

The GEND Pinellas Plant S&H program is on the threshold of transition. AL is making progress to gain control of the S&H programs at the GEND Pinellas Plant and to instill a modern safety culture; but this process has not been consolidated yet and will require user and contractor acceptance for full implementation.

Past practice was that line management abdicated some of the health and safety responsibility to the EH&SP organization. There is still some feeling that health and safety belongs to the EH&SP organization. The overall assessment of health and safety is that the plant is generally being operated safely. EH&SP has been fulfilling a dual role of performing some program line safety responsibilities as well as some independent safety overview. Because of this past dual role, and a past emphasis on safety ownership, the independent overview function is deficient in corrective action follow-up and trending, and the performance of plant-wide functional safety appraisals. The weapons related QA program is established, implemented, and fully functional; but the non-weapons related QA program was established only 3 months ago. As a consequence, the implementation procedures are not adequate to support critical activities such as radioactive and toxic substances control and detection, system capability for reporting or responding to an emergency, and systems that could cause a fire or an explosion or could cause a major disaster. Critical systems are still being identified by GEND. Many of these

concerns have been identified by GEND and safety assurance initiatives have been developed.

A GEND policy and program governing the use of procedures site-wide has not been developed and implemented. Properly controlled technical documents and drawings and other related material are not readily available to the personnel that require such information. Safety goals and performance are not measurable nor auditable for the various health and safety functions.

Most of the personnel training is accomplished in an informal manner. As a result, in some critical health and safety areas the training program is non-existent and not at the level required at DOE facilities. There is no policy and procedures manual or GEND standard for training, which has led to considerable variability in each training program. This deficiency was found in many of the disciplines appraised by the S&H Subteam. These areas included technical support (packaging and transportation), emergency preparedness, industrial hygiene, occupational safety, and fire protection.

The safety review function at GEND does not fulfill any of the requirements of DOE 5482.1B. GEND has developed plans to reorganize and revitalize the internal safety appraisal function. This function must include proper makeup of disciplines, thorough documented reviews, proactive independent reviews, management appraisals of the safety review system and EH&S performance, a follow-up system for safety concerns and improvements on operating experience, and a system for distributing UORs and lessons learned throughout GEND.

In conclusion, many of the concerns expressed by the S&H Subteam may be the result of a lack of a comprehensive safety (hazard) assessment of the many functions and operations at the Pinellas Plant. Without such an analysis, a clear understanding of the hazards associated with the varied operations and the consequences of credible accidents is not possible. An evaluation of the mitigations that could be used to reduce these risks cannot be performed at this time.

4.5 Safety and Health Assessment Findings and Concerns

4.5.1 Organization & Administration

4.5.1.1 Overview

The review of GEND was accomplished through interviews with the General Manager, Section Managers, Subsection Managers, Floor Managers, and selected staff members; and document reviews. Interviews were also conducted with AL/PAO personnel. All Performance Objectives in the Organization and Administration category were addressed during this appraisal.

The organizational structure at GEND is generally well defined and understood. There has been some reorganization, and some principal staff departure in recent weeks, which leaves some key positions unfilled or with acting managers. Everyone interviewed was well aware that the current emphasis is safety first, quality second, and production third, and that the line organization is responsible for safety. However, past practice was that some line safety responsibilities were assigned to and performed by the EH&SP organization. Even though all managers professed that safety is a line responsibility, there was still some feeling that safety belonged to EH&SP. In addition, the mission and function statements for the Sections and Subsections do not include ES&H as a functional responsibility, and position guides (position descriptions) for exempt personnel do not reflect ES&H as a line safety responsibility.

The overall assessment of GEND is that the plant is generally being operated safely. However, it has been a long-standing practice for EH&SP to perform some program line safety responsibilities as well as independent safety overview of these same functions. This concept is changing, but EH&SP still performs many line safety responsibilities as required by GOPs and past practice. Because of this past dual role, and a past emphasis on EH&SP safety ownership, the independent overview function is deficient in corrective action follow-up and trending, and the performance of plant wide functional safety appraisals. Furthermore, there is a lack of defined points to alert line personnel that safety overview needs to be involved.

Management goals and performance objectives are developed annually for all exempt personnel. In past years ES&H goals appeared in very few of these objectives. The General Manager, GEND, directed that for 1990 ES&H would be meaningful and prominent in all performance objectives. However, only a very few performance objectives are measurable to the extent that one can determine success or failure. Most of these objectives are of the type that are open ended and subjective in nature.

GEND reports to the GE corporate office through GE Aerospace. As such, GEND is operated as a separate entity; however, GEND stated that corporate support is available as needed to enhance or support any and all activities.

The AL/PAO has provided less than adequate guidance and direction to GEND regarding the implementation of DOE Orders and directives. Its oversight of GEND has not been consistent or effective and has not provided GEND with a true picture of ES&H programs at the Pinellas Plant.

In the past the Pinellas Plant has been acknowledged as a moderate hazard, non-nuclear, and non-critical facility. However, recently the General Manager requested an official determination regarding the hazard level and nuclear status of the plant. This official determination had not yet been made. Currently there are few in depth and technically competent safety analyses of product lines, activities and operations at the Pinellas Plant. In addition, there has been no detailed evaluation or risk assessment regarding offsite hazards effects upon the plant.

GEND does not have a system to ensure that important documents are properly controlled and distributed to individuals and organizations who need this information. In addition, there is no system to ensure that properly prepared, reviewed, and approved procedures exist for all necessary activities.

GEND has developed an extensive substance abuse program that includes a personnel assistance program. All new employees are tested initially, hazardous area employees are routinely tested, and all employees are subject to random drug testing. The random testing includes 50 tests per week. By statistics, the entire plant should be covered approximately every one and a half years.

The employees in GEND, in an effort to foster "Pride in the Work Place" recently formed the "Employee Communication Program." This program has been very successful in improving housekeeping, parking lot safety, dress code for safety, and an esprit de corps among employees.

In summary, many safety improvements are in transition and will require vigilant management attention to accomplish this cultural change.

4.5.1.2 Findings and Concerns

OA.1 SITE/FACILITY ORGANIZATION

PERFORMANCE OBJECTIVE: Management should organize and manage the site/facility's work, programs, and resources so that safety and health are an integral part of the personnel duties and requirements that are consistently implemented.

- FINDINGS:**
- o Position Guides (position descriptions) exist for all exempt positions at GEND. However, many Position Guides are outdated (dates ranging from 1981 through 1984) or undated.
 - o Among other information, the Position Guides include broad functional statements and principal statements of responsibility; however, ES&H is not a listed responsibility.
 - o The S&H Subteam found that all of the Manufacturing Floor managers interviewed had a copy of their own Position Guide; however, Position Guides/hourly job analysis applicable to operations, were not readily available in the work area. (See Section OP.1)
 - o GOP A.3.03, "Employee and Plant Environmental Health and Safety" dated January 12, 1990, 1) assigns responsibility to section level managers to "Assure that line management ownership for environmental health and safety exists ..." and "... that all personnel understand and implement their ES&H responsibilities;" and 2) lists some ES&H responsibilities for managers and supervisors.
 - o The General Manager of GEND has directed that ES&H will be a part of each exempt employee's performance objectives starting in CY 90.
 - o The General Manager's memo of October 30, 1989 states, "The most important responsibility of supervisors is to provide a safe working environment for the employees under his direction."

CONCERN: The Position Guides for exempt positions are out of date and do not reflect current ES&H responsibilities and authorities.
(OA.1-1)
(H3/C2)

- FINDINGS:**
- o The mission and function statements for each Section and Subsection of GEND is contained in a document entitled Neutron Devices Department Functional Organization, dated March 1987. However, many organizational changes have occurred since the issuance of the document.
 - o Other than in the EH&SP organization, the mission and function statements do not contain ES&H as a functional responsibility.

- o It is DOE policy that "... line management responsibility for ES&H functions flows from the Secretary through the PSO, (Program Secretarial Officer) to the field organization managers, to the contractors" (DOE 5480.1B).

CONCERN:
(OA.1-2)
(H3/C2)

Many GEND Section and Subsection mission and function statements do not include ES&H as a functional responsibility.

OA.2 ADMINISTRATION

PERFORMANCE OBJECTIVE: Administrative programs and controls should be in place to ensure that policies concerning health and safety are administered throughout the facility.

- FINDINGS:**
- o DOE 5480.1B (September 23, 1986) requires, "... overview of environment safety and health...independent of line management responsibility."
 - o It has been a long-standing practice at GEND for the EH&SP to fulfill a dual role of both program line safety and independent safety overview.
 - o GEND has recognized this conflict of interest and has been moving towards EH&SP performing a purely independent safety oversight role. However, EH&SP is still very much playing a dual role. Examples include the following:
 - GOP G.1.01 (January 12, 1990) requires EH&SP to "... initiate the preparation of an Unusual Occurrence Report ...," rather than their reviewing and approving the UOR.
 - GOP G.1.02 (November 13, 1989) requires EH&SP to "Prepare injury reports as required by the Workers' Compensation laws of Florida."
 - GOP G.1.03 (January 12, 1990) requires EH&SP to "Operate all units of the Pinellas Plant's hazardous waste treatment and storage facility...."
 - GOP G.1.06 (August 18, 1988) requires EH&SP to "Prepare, with input from requester, the required reports (regarding new, modified, or relocated facilities, equipment, or processes) and forward to DOE/PAO."
 - GOP B.5.03 (May 26, 1978) requires EH&SP to "Complete Form FC-105 Environmental Health and Safety Programs Work Permit when maintenance work is to be performed in a radiation, radioactive material or contamination area, or if work will involve opening or entry into equipment or systems having the potential for containing harmful substances."
 - EH&SP inspects portable ladders and places inspection stickers on them.
 - EH&SP fire safety engineers are required to maintain current the as-built drawings for fire systems.
 - EH&SP maintains the lockout/tagout logs and files.

- EH&SP provides on-the-floor day-to-day safety direction to subcontractors at GEND.
- EH&SP budgets for, and initiates corrective action in, those areas of the plant in which line management does not admit to ownership.
- After EH&SP performs an audit, it sometimes initiates the corrective action rather than have line management initiate the correction.
- PAO has, sometimes in the past, sent their DOE audit reports to EH&SP for corrective action rather than to the line manager.
- For new, modified, or relocated equipment, Maintenance installs a buff-colored tag. This equipment cannot then be operated until EH&SP performs a line safety inspection and installs a green-colored tag.

CONCERN: (OA.2-1) (H2/C1) EH&SP has been performing some line safety functions and independent safety oversight of the same functions. (See Sections IH.2 and EP.1 and Concern TS.6-4.)

- FINDINGS:**
- o EH&SP performs approximately 380 walk-through, check sheet type audits per year.
 - o Sometimes EH&SP auditors will discuss needed corrective actions with the floor manager and sometimes the auditor will initiate the corrective action.
 - o The Manufacturing Section floor managers interviewed, said that they seldom see the EH&SP audit report and are never aware of any follow-up to assure corrective action.
 - o There is no formal corrective action tracking system.
 - o EH&SP does not perform plantwide safety discipline functional appraisals (e.g., Industrial Hygiene or Occupational Safety) to determine the status of the overall safety functional discipline.

CONCERN: (OA.2-2) (H2/C1) EH&SP does not perform plant-wide functional safety appraisals and does not have a follow-up and tracking system for corrective actions. (See Sections EP.1, FR.6, RP.2, IH.1, OS.1, and FP.7 and Concerns MA.1-2, TS.6-2, TS.6-4, and OS.4-1.)

- FINDINGS:**
- o EH&SP is not always advised in a timely manner of ES&H issues that should require their review and approval. However, GOP G.1.06, "Review of New, Modified or Relocated Facilities, Equipment or Processes For Safety Analyses And Environmental Considerations," dated August 18, 1988, and

the Environmental Health and Safety Manual, Sections 1.29 and 2.9, provide some guidance for EH&SP involvement in safety tags and lockout/tagout activity.

- o The management of the Engineering Section stated that they depend on their qualified and knowledgeable staff to involve EH&SP when required rather than rely on GOPs or other requirements to involve EH&SP at specific points or events.
- o The management of the Manufacturing Section stated that there would be no need for Manufacturing to involve EH&SP in any operation. It was their opinion that the Facilities Section would involve EH&SP for anything involving ES&H within Manufacturing.
- o Unless a person is injured or there is a fire, spill, or property damage, there is no formal system that assures that an unusual event is reported to EH&SP. The safety significance of each event is left to the discretion of the individual investigator.
- o The official flow diagram, "New Product Introduction System," (10023544, Issue B, dated September 27, 1989) does not include a trigger point which requires EH&SP involvement.
- o EH&SP is usually involved in the review of purchasing requests and appropriation requests.
- o A former manager of EH&SP, stated that when the Chemical Vapor Deposition Program and the Lithium Battery Program each were started at GEND, EH&SP was not notified or involved until considerable work had been completed.

CONCERN: (OA.2-3)
(H1/C2) There is no system for involving EH&SP in a timely and effective manner in the review and oversight of all activities and projects that could have safety significance.

FINDINGS:

- o GEND has implemented a "Smoking/No Smoking" policy as published in General Operating Procedure A.3.01.
- o No specific code, standard, or regulation applicable to smoking in GEND facilities was identified; however, a DOE Order and State law are practical "Best-Management" guidelines. DOE 3792.2 (dated April 8, 1987) extends 41 CFR 101-20, GSA "Smoking Regulation for Public Buildings" to DOE-controlled facilities. This Order was issued to implement requirements under the Federal Employee Health & Safety Act and is applicable only to federal employees. This Order is not interpreted to apply to GOCO facilities controlled by a contractor. AL has not issued an area office directive or supplemental order applicable to GOCO facilities. The "Florida Clean Indoor Air Act" (1985) applies to places of employment in Florida [Section

386.203(1)(S)]; restricts smoking to designated smoking areas [Section 386.204]; requires designated smoking areas to be conspicuously posted [Section 386.206]; and permits work areas to be designated as smoking areas only if all workers routinely assigned in that area agree [Section 386.205]. As a GOCO facility, the statute may not apply to GEND; however, the GEND "Smoking/No Smoking" policy was reportedly written to assure compliance with this State regulation.

- o The basic objective of the GEND facility policy, DOE 3792.2, and the Florida Clean Indoor Air Act is to protect public health, comfort, and general environmental quality by minimizing involuntary exposure to secondhand tobacco smoke (passive smoking). The GEND policy and implementation, as evidenced by employee interviews and facility tours, is not effective in complying with the intent of the guidance documents or stated policy.
- o The GEND policy is not as rigorous as the DOE Order, or State statute, and, as such, does not reflect the commonly accepted best-management practice as accepted by peer DOE GOCO facilities. The GEND policy states that an employee or employees may designate their specific work area a non-smoking area. In addition, for a larger work area to be designated "smoke-free," a unanimous consensus is required. The DOE Order and State statute require smoking areas to be specifically designated and unanimous consensus for a larger work area to be designated a "smoking area." On a practical basis, the GEND "favors" smoking in the work area; the DOE Order and State statute "favor" non-smoking in the work area. Generally accepted, DOE practice is to encourage non-smoking environments.

CONCERN:
(OA.2-4)
(H2/C2)

The GEND facility "Smoking/No Smoking" policy is not effective in eliminating passive exposures to secondary tobacco smoke.

OA.3 MANAGEMENT OBJECTIVES

PERFORMANCE OBJECTIVE: Site/facility management objectives should ensure commitment to safe operation, including enforcement of approved work practices and procedures.

- FINDINGS:**
- o Management and performance objectives are developed annually for GEND as a whole, as well as individual goals and objectives for Sections, and Subsections of GEND. Goals and objectives are also developed for all exempt personnel.
 - o A General Manager directive dated October 3, 1989 stated that "... ES&H should be prominent/meaningful...." in the 1990 goals and objectives.
 - o A few of the goals are measurable such as "Reduction of Accidents by 10 percent;" however, most of the goals and objectives are subjective and open-ended in nature, with no means of measuring achievement. Examples include the following:
 - "Enhance the Department's awareness of, and commitment to, Environmental Health and Safety Program requirements to assure compliance in every aspect."
 - "Continue to emphasize Environmental Health and Safety Program requirements...."
 - "Enhance awareness and commitment to EH&SP requirements..."
 - "Upgrade safety emphasis and performance resulting in reduction in potential environmental hazards" and "Increase Safety and Housekeeping awareness."

CONCERN: Goals and objectives are in most cases subjective and not stated in such a way that fulfillment or achievement of the goal or objective can be measured; nor are they given appropriate emphasis in management documents. (See Sections OP.1, MA.1, and OS.1.)
(OA.3-1)
(H3/C2)

OA.5 MANAGEMENT ASSESSMENT

PERFORMANCE OBJECTIVE: Management and supervisory personnel should monitor and assess facility activities to improve performance in all aspects of the operation.

- FINDINGS:**
- o AL conducts independent reviews of the Emergency Preparedness Program. However, the last review report is dated October 14, 1988. (See Section EP.1.)
 - o The AL surveillance program at Pinellas does not provide GEND management with clear guidance: 1) for measuring safety and health program performance expectations, or 2) to measure performance results. (See Concern OS.4-4.)
 - o AL/PAO has, sometimes in the past, sent their DOE audit reports to EH&SP for corrective action rather than to the line management. (See Section OA.2.)
 - o AL/PAO has consistently given GEND high ratings for ES&H in the CPAF rating system.
 - o The AL/PAO distribution of DOE Orders has not been consistent or uniform, and has not made it clear to GEND which DOE Orders and directives are to be implemented.
 - o The most recent (1989) appraisal by AL rated the Industrial Hygiene Program as "meeting or exceeding the established DOE guides and recommended good practices"; this rating could not be supported by this appraisal. (See Section IH, Overview, and Section OS.4.)

CONCERN: The AL/PAO oversight of GEND has not been consistent or effective and has not provided GEND with a true picture of their ES&H program.
(OA.5-1)
(H2/C1)

OA.7 DOCUMENT CONTROL

PERFORMANCE OBJECTIVE: Document control systems should provide correct, readily accessible information to support site/facility operations.

- FINDINGS:**
- o DOE 5481.1B, "Safety Analysis and Review System," dated 9/23/86 requires the "... preparation of appropriate safety analyses for each DOE operation...." According to this Order, the safety analysis should address in appropriate detail "... those DOE operations that involve hazards that are not routinely encountered and accepted in the course of everyday living by the vast majority of the general public...." DOE 5481.1B also states that "The analysis for a DOE operation which involves only hazards of a type and magnitude routinely encountered and accepted by the public may be a simple, formal statement of this fact."
 - o Programs for identification and evaluation of potential safety and health concerns regarding occupational safety at the Pinellas Plant have not been adequately developed or implemented.
 - o There are very few in-depth and technically competent safety analyses of current product lines, activities, and operations to accurately quantify the extent of the potential hazards that exist at the Pinellas Plant. In addition, there has been no detailed evaluation or risk assessment of offsite hazards effects upon the Pinellas Plant.
 - o The Pinellas Plant has generally been designated by DOE as a moderate hazard, non-nuclear facility; however, in a November 14, 1989 memo from R. C. Abington, General Manager of GEND, to Bruce Twining, Manager AL, he requested an official designation to this extent for the Pinellas Plant. A final response had not been received.
 - o A letter dated December 12, 1989 from J. R. Majestic, Manager, EH&SP, GEND to H. F. Gregory, Chief QA and Safety Branch, PAO requested concurrence in GEND's proposed action to prepare a "... site-wide SA (Safety Assessment) to identify operations/facilities that present levels of risk not normally accepted by the public." This letter also proposes that "For those parts of the plant's operations (that presents levels of risk not normally accepted by the public), individual SARs will be completed," as required by DOE 5481.1B.
 - o A memo dated January 5, 1990 from E. E. Patenaude, PAO Manager, to K. Hall, Acting Manager of EH&SP, provided a non-concurrence in GEND's proposed action, and requested the preparation of a site-wide Safety Analysis Report.

CONCERN: (OA.7-1
(H2/C1) A site-wide safety assessment and subsequent Safety Analysis Reports do not exist for all those product lines, activities, and operations that are determined by the assessment to present a hazard of a type and magnitude not normally encountered and accepted by the public in the course of their everyday living; nor have there been developed operating limits, or Operational Safety Requirements that provide boundary for the safe operation of the plant. (See Sections OS.3 and SS.3 and Concerns EP.2-1, EP.2-2, OP.2-1, OS.3-1, and FP.3-1.)

- FINDINGS:**
- o Controlled technical documents, drawings and other operations related material are not readily available to the operators. (See Section OP.3.)
 - o A document control system does not exist to ensure that the current revisions of documents and the correct documents are provided to the appropriate staff members. (See Section OP.3.)
 - o The Bldg. 400 emergency plan is not a controlled document. (See Section EP.2.)
 - o Emergency procedures for the fire brigade and fire protection personnel are described in informal documents. (See Section EP.2.)
 - o GEND does not have a document control program for technical support functions. (See Concern TS.2-1.)
 - o Management has not established and maintained clear, consistent, and up-to-date standards and directives to assure effective implementation of the safety and health program. (See Section OS.2.)
 - o The GOPs provided in the Tiger Team library were not fully up-to-date in the Health Physics area.
 - o Posted operator aids are not administratively controlled and therefore their use and posting throughout the facility is neither consistent nor verifiable with respect to validity or accuracy. (See Concern OP.1-3.)
 - o An emergency procedure for the operation of the Furnace Work Station Number 712, in the neutron generator subassembly area, was posted in the work station. However, the procedure was not dated, signed, or given a document control number. (See Section EP.2.)

CONCERN: (OA.7-2)
(H2/C2) GEND does not have a system to ensure that important requirements, instructions, procedures, and documents are properly controlled and available in the workplace to individuals and organizations who need the information.

- FINDINGS:**
- o Log keeping practices do not adequately convey the facility status and are not always in accordance with Operating Instructions 1.107. (See Concern OP.2-2.)
 - o A policy governing the format, content, review, approval, revision, and use of procedures has not been implemented at all work locations. (See Section OP.3.)
 - o A system requiring the review and approval of operating procedures by all personnel charged with assuring the adequacy of the procedures does not exist. (See Concern OP.3-2.)
 - o Generation and updating of preventive maintenance instructions are not being performed in a timely manner. (See Concern MA.6-1.)
 - o Formal implementing procedures for emergency action are not established for all operations as required by DOE N 5500.2. (See Concern EP.2-3.)
 - o GEND policies and procedures for handling, packaging, and shipping hazardous materials, substances, and wastes, do not meet the requirements of DOE 5480.1A, 5480.3, 5480.4, 1540.1 and 1540.2. (See Concern TS.6-3.)

CONCERN:
(OA.7-3)
(H2/C1)

GEND does not assure that procedures are developed, reviewed, and approved for all necessary activities, and does not have a policy that meets DOE requirements to assure consistency in the format, content, review, approval, use, and revision of procedures.

4.5.2 Quality Verification

4.5.2.1 Overview

The scope of the Quality Verification appraisal included all Performance Objectives in this category. Quality Assurance, at the Pinellas Plant, consists of Weapons Related QA and Non-Weapons QA. Weapons Related activities refer to all products and production related activity. Non-Weapons related activities include utility systems, production support equipment, and auxiliary equipment. The Weapons Related Program is established, implemented and fully functional, addressing all GEND products. Non-Weapons Quality Assurance was established just 3 months ago, by a General Operating Procedure that sets policy, establishes objectives, and defines responsibility and authority. It references DOE Orders and the national standard for QA. GEND has recognized the need to establish, implement and maintain a Non-Weapons QA Program and has developed a Safety Assurance Initiative for accomplishment of that objective. An overall quality assurance program for GEND to establish requirements, give guidelines and address interface requirements for GEND functional areas, is not yet developed for subordinate Quality Program Plans (QPPs). As a consequence, most of the QPPs that have been developed are general in nature, nonspecific in requirements, and not fully responsive to all applicable requirements.

In the absence of an overall GEND QA Program, the QPPs often use different approaches and formats, and do not address interface requirements. The QPPs are not adequate to support critical activities. Critical systems are still being identified by GEND; however, in the interim, important systems are not receiving appropriate levels of QA. For example, the QA requirements in the draft FSAR prepared for the Tritium Recovery Facility are dependent on the QPPs.

Control of purchased materials in weapons related activities is documented and implemented. Similar controls are not yet in place for the Non-Weapons Programs. As a consequence, there is no independent verification of quality.

In the weapons related programs, provisions are established for the receiving and pre-use inspections of purchased material items. A program has not been established for the Non-Weapons Program. Receiving inspections are made only for general conformance to purchase requirements. The General Stores warehouse maintains control of spare parts and, upon receipt, individually marks each item. Warehouse personnel are qualified by work experience, education, and training. In the maintenance storage areas, control of spare parts is less formal and maintenance spare parts are not individually identified. The maintenance storage area in the 100 Area contains used equipment. There are no requirements for components such as electric circuit breakers and other used parts to be tested or verified prior to use. Because critical systems are not yet identified, the use of untested used parts in such systems cannot be assured. Used parts should be certified as functional. This concern was rated as a Category II for immediate attention. GEND has recognized the need to improve quality control in maintenance activities and has identified a Safety Assurance Initiative.

GEND has an established calibration maintenance policy and implementing procedures for all organizations. The system is comprehensive and uses a

computer based tracking system to identify individually each item that requires calibration. Status and backlog of calibrations are maintained and provided to user groups. There is a concern, however, that the scope of the audits of the calibration system are not sufficiently broad to assure that calibrations are performed with traceable equipment, that procedures are current, and that calibration data have been correctly interpreted. The S&H Subteam found two incidents where this was not the case.

The identification and control of hardware and materials is well established for weapons related items. A review of the control of materials was made in the Specialty Equipment organization in the Manufacturing Section. This group fabricates components in support of production. They have implemented a system to identify and control components for assemblies and inspections. The system is audited by QC&C. The systems for control in the other Non-Weapons areas such as Facilities and Maintenance organizations, have not yet been implemented resulting in the concern that non-conforming material may be used in critical systems. This concern was identified by GEND and a Safety Assurance Initiative has been developed.

Receiving inspections have been implemented in the Specialty Equipment organization. Inspectors are qualified by experience, education, and training. Inspectors in the Metal and Ceramic Fabrication subsection are trained. A formal training program for mechanical inspection is being re-instituted after a period of 1 year in which it was not active. Inspections to verify conformance to requirements in the non-weapons programs are not yet developed.

In the non-weapons program, no special processes such as welding, heat treating, non-destructive testing, and chemical cleaning are used. All such activities are performed by certified contractors who are required to furnish necessary documentation to assure conformance to requirements.

4.5.2.2 Findings and Concerns

QV.1 QUALITY PROGRAMS

PERFORMANCE OBJECTIVE: Administrative programs and controls should be in place to ensure that policies concerning quality are administered for each facility throughout the site.

- FINDINGS:**
- o The operations of the Pinellas Plant by GEND are categorized as Weapons Related or Non-Weapons related. Weapons Related activities refer to all products, production activity and associated equipment. Non-Weapons related activities include production support equipment, utility systems, and auxiliary systems in support of production activities (e.g., air handling equipment, building exhaust systems, HEPA filters, safety equipment, and the like). Also included in the Non-Weapons QA Safety Assurance Initiative are Federal, State, and local regulated activities.
 - o The Non-Weapons Quality Assurance Policy has been established in GOP A.5.03. It invokes the requirements of DOE 5700.6B, AL 5700.6B, Revision 1, and ANSI/ASME NQA-1 for all GEND organizational units and establishes the Quality Control and Consulting (QC&C) organization as the independent oversight group with direct access to the General Manager, GEND. An overall QA program for GEND, which is the documented management system for planned actions, is not yet fully developed to establish requirements, provide guidelines, and address interface requirements for the subordinate Quality Program Plans (QPPs) to be developed for GEND functions.
 - o GEND has recognized the need to establish and implement the Non-Weapons Quality Program and has developed a Safety Assurance Initiative to complete this action.

CONCERN: A quality assurance program, as required by ANSI/ASME NQA-1 and GOP A.5.03, has not been fully developed and implemented for GEND Non-Weapons Programs.
(QV.1-1)
(H2/C1)

- FINDINGS:**
- o QPPs have been developed as required by DOE 5700.6B and GOP A.5.03 for 13 functional areas. Approximately 25 additional QPPs have been identified for potential development. Review of the completed QPPs indicates that different approaches/formats were used in each QPP. They are general and do not address all the requirements in DOE Orders. Interface requirements between the QPPs have not been addressed. For example, the Environmental Chemistry Laboratory excludes chain of custody quality controls and makes allowances to change procedures independent from other GEND organizations. QPPs for users of the Laboratory do not always address these areas.

- o The QPPs have been developed outside the structured documentation system of GOPs and instructions. The QPPs are not assigned document numbers in a formal system nor are they controlled documents. (See Concern OA.7-2.)
- o A survey of GEND Quality Assurance Programs (Albuquerque) performed by AL Non-Weapons Quality Assurance, dated April 14, 1989, noted that only 11 QPPs had been prepared and that they were general in nature and some do not address all QA requirements. Action to upgrade and reissue these QPPs is still to be completed.
- o The Quality Assurance Appraisal Report of the Environmental Hazard Elimination Project dated December 13, 1988, recommended that the Pinellas QA Manuals (Design and Construction) be revised to meet new provisions of AL 5700.6B. The manuals have not yet been updated.
- o Currently, there is only one QA engineer on the QC&C staff for the Non-Weapons Program. The QA engineer has limited time for the QA program because he has been assigned to the GEND TSA initiative. Two new vacancies exist in QC&C, but they are not yet filled.
- o GEND recognizes the need to develop all the QPPs under a Non-Weapons Quality Assurance Program. This proposed activity is included in a Safety Assurance Initiative.
- o QC&C staff, in the Weapons and Non-Weapons Programs, are qualified by education, experience, and specialized training to fulfill their job requirements. However, no formal training requirements (e.g., lead auditor required by ANSI/ASME NQA-1) have been established. Lead auditor training is being developed by Albuquerque Weapons Quality Division. (See Concern TC.1-1.)
- o Plans and actions to independently assure quality achievement in the Non-Weapons program are not fully developed. Independent verification in the Facilities and Maintenance organization activities are not in evidence.
- o The draft FSAR for the Tritium Recovery System dated November 1989, includes a quality assurance section that is dependent on QPPs to assure conformance to requirements. Many of the necessary QPPs are not developed to support the FSAR.
- o Survey and audit findings, developed by QC&C, are not consolidated into one system for tracking, evaluation of trends or root causes, and review by appropriate levels of management; however, a consolidated system is currently in the planning stage.

- o Start-up of new facilities (e.g., Chemical Vapor Deposition) requires sign-off by line management and safety; however, there is no requirement for independent verification of quality.
- o Critical systems have not yet been designated for the Pinellas Plant. QPPs have not acknowledged this issue. GEND has a Safety Assurance Initiative to identify critical systems in the Pinellas Plant. Critical systems are to be determined to the following criteria: a malfunction could result in release of radioactive or toxic substance; a malfunction could result in failure to detect the presence of radiological or toxic substances; loss of system capability could result in the inability to detect releases or could impair ability to report or respond to an emergency situation; a system malfunction could result in explosion or fire; and a system malfunction could cause injury, loss of life, or significant property loss.

CONCERN:
(QV.1-2)
(H2/C1)

Quality Program Plans to address the requirements for GEND functions are not fully developed and implemented for all activities as required by DOE 5700.6B and GOP A.5.03.

QV.2 PROCUREMENT AND SUPPLIER CONTROL

PERFORMANCE OBJECTIVE: Provisions should be established for the control of purchased material, equipment, and services; for selection and control of suppliers; and for assessing the adequacy of procurement activities.

- FINDINGS:**
- o The Appropriations request form is the initial approval document for expenditures for modifications, additions, and new systems or equipment. It is prepared, in conformance with GOP F.5.02, "Appropriations Request," for management approval and initiation of equipment and financial accountability. EH&S reviews and approves the appropriation request; however, QC&C is not required to review and approve.
 - o The user of the procured items develops the specifications for procurement in accordance with requirements. A General Purchase Requisition (GPR) is prepared and approved by Management and EH&S; however, no QC&C review is required.
 - o Records and other documentation required by the purchase requester are included in the GPR. Verification of receipt of all documentation and conformance to requirements is the responsibility of the requester. Verification and acceptance of the technical aspects of the procured item and necessary documentation is not generally fed back to Procurement.
 - o GEND has not developed an overall quality program that describes the GEND system to control purchased items as required by ASNS/ASME NQA-1. Also few of the QPPs that have been developed address with specificity how they will implement procurement control. Procurement interface requirements for GEND organizations are not defined in all QPPs.

CONCERN: Control and quality assurance requirements for purchased items and material as required by ANSI/ASME NQA-1 for Non-Weapons critical systems have not been developed and implemented for all GEND organizations.
(QV.2-1)
(H2/C1)

QV.3 RECEIVING AND PREINSTALLATION INSPECTIONS

PERFORMANCE OBJECTIVE: Provisions should be established for the inspection of purchased material, equipment, and services in accordance with documented procedures by trained personnel.

- FINDINGS:**
- o Verification of suppliers conformance to specifications and requirements is performed at the vendor site when it is deemed necessary for critical systems components. There are no provisions for QA participation for non-weapons critical systems. ANSI/ASME NQA-1 requires inspections by trained personnel not responsible for the work, for critical systems.
 - o Receiving of all incoming materials is performed in the Bldg. 1400, Central Receiving. Visual inspections are made to determine that the item generally meets the purchase description and that there is no apparent damage. No measurements or other technical compliance of the purchase is made in this area.
 - o The Specialty Equipment organization maintains storerooms for items to be used in processing or test equipment in support of production. Parts are individually identified, and inspections are performed by qualified inspectors in accordance with specifications. Written procedures for the storeroom and inspection are being developed and are about 35 percent complete.
 - o Some of the spare parts for Plant Facilities received at Central Receiving are maintained in General Stores Stockroom. Each part is identified and labeled in accordance with established procedures. No independent inspections are performed. Verification of conformance to requirements is made by the end user.
 - o The maintenance organization maintains two storage areas. One storeroom in the maintenance area is used for items designated to be used in work order projects. Inspections are performed by the end user, but items are identified with inspection status.

CONCERN: Receiving and preinstallation inspection requirements for critical systems in the Non-Weapons programs have not been developed as required by ANSI/ASME NQA-1.
(QV.3-1)
(H2/C1)

- FINDINGS:**
- o The other maintenance storage area is comprised of trailers located in the 100 Area. This area is used to store high usage, bulky items of a generic nature such as piping, conduit, electrical boxes, and electric wire and cable. In addition to new equipment, salvaged used equipment is stored.

- o The salvaged used equipment is not segregated from new equipment or identified as used equipment. Included in the used equipment are electric control devices (e.g., circuit breakers). No special inspection is required of the used equipment. (See Concern TS.3-1.)
- o There are no requirements to functionally test any of the used equipment; however, all usage is by trained craftsmen familiar with the equipment. Failure of this equipment could cause injury to personnel and if installed in critical systems could cause a system malfunction. There is no history to indicate that there have been any problems with used equipment (e.g., Unusual Occurrence Reports).

CONCERN:
(QV.3-2)
(H1/C1)
CAT II

There is no control system to assure that used electric control devices will function as intended and that salvage parts used in critical systems have been first verified to be functional.

QV.4 CALIBRATION PROGRAM

PERFORMANCE OBJECTIVE: Provisions should be made to assure that tools, gages, instruments, and other measuring and testing devices are properly identified, controlled, calibrated, and adjusted at specified intervals.

- FINDINGS:**
- o The Calibration Maintenance Policy is documented in GOP A.4.02 and is applicable to all GEND organizations. A proceduralized, computer-based system, is developed to track each instrument individually. The QC&C group performs quality audits; however, the QC&C surveys do not verify that green calibration sticker is supported by appropriate documentation.
 - o The S&H Subteam identified cases where the radioactive source for instrument calibration lacked traceability and certified calibrated instruments were found to have been out of specification because the technician did not recognize that the data were outside established criteria. (See Section RP.8.)
 - o The Sandia Primary Standards Laboratory survey of the Standards and Calibration Program dated April 4, 1988, and GEND Quality Survey Report, GEND-812 of standards and calibration activities dated February 5, 1988, did not validate that instruments checked had supporting documentation indicating calibration was performed according to approved procedures and that the data were within established criteria. Also, surveys of the calibration system do not verify that auditable documentation such as training of technicians, procedures, data recording, traceability of calibration instruments, and other pertinent documentation for all items is maintained and verified.

CONCERN: Surveys and audits of the calibration status are not sufficiently broad in scope and depth to verify calibration.
(QV.4-1)
(H3/C1)

QV.5 IDENTIFICATION AND CONTROL OF HARDWARE/MATERIALS

PERFORMANCE OBJECTIVE: Provisions should be established to identify and control the use or disposition of hardware, materials, parts, and components as well as, to assure that incorrect/defective items are not used.

- FINDINGS:**
- o There is no established procedure to control nonconforming materials for non-weapons items. Also, there is no formal system for non-conformance reports. There is no QPP developed to address receiving inspection for technical conformance of the material. The end user performs inspections. No independent verification is performed.
 - o The Maintenance organization maintains a storeroom to accumulate and store items for work order projects. This storeroom has segregated storage, but does not individually identify parts for critical systems as required by ANSI/ASME NQA-1.
 - o GEND has identified the need to establish a system for control of inoperable and damaged equipment and has a safety assurance initiative to address the need.

CONCERN: There is no system for the Non-Weapons Program to identify and control hardware and materials for critical systems in the maintenance area warehouse, and there is no non-conformance reporting system.
(QV.5-1)
(H2/C1)

QV.6 INSPECTIONS

PERFORMANCE OBJECTIVE: Prerequisites should be provided in written inspection procedures with provisions for documenting and evaluating inspection results.

- FINDINGS:**
- o For the Non-Weapons Programs, there are no guidelines developed for inspection of work to verify conformance to requirements for critical systems. Inspections, hold points, and independent verification of quality achievement are requirements of ANSI/ASME NQA-1. (See Concern RP.3-3.)
 - o The maintenance organization does not have a system for hold points or other inspections to independently verify quality achievement in accordance with established requirements in ANSI/ASME NQA-1.
 - o Independent verification of conformance to requirements is not being done. Review of the Chemical Vapor Deposition project and the installation of the hydrogen furnace confirmed that there are no hold points or independent verification of quality.
 - o The need for quality assurance and an inspection program for Maintenance and Facility Operations has been recognized by GEND, and Safety Assurance Initiatives have been developed.
 - o There is no inspector qualification program for weld inspections and non-destructive testing because GEND does not perform any of these special processes.

CONCERN: A system for inspections of critical systems in the Non-Weapons Program is not yet developed in accordance with requirements of ANSI/ASME NQA-1.
(QV.6-1)
(H2/C1)

4.5.3 Operations

4.5.3.1 Overview

This appraisal addressed all Performance Objectives in the Operations area. Operations at GEND can be divided into three major groups: product development operations, product manufacturing operations, and support facility operations. Those groups function independently and have both formal and informal relationships. The organization charts depict the structure of the operations groups. The responsibilities of personnel are defined in job descriptions. However, no formal document is available to the staff at large to clearly define duties, authorities, and responsibilities specific to each position in the line organization.

In general, operational activities are conducted in a manner that is conducive to safe and reliable operations. However, the monitoring of the operating condition of systems and equipment in some facilities is not consistent with acceptable standards.

Log keeping practices were not adequate to convey the facility status and not in keeping with the GEND procedure. A formal shift turnover program has not been implemented at all facilities by GEND.

A document control system which ensures that all documents are current and that the correct documents are provided to the appropriate staff members, has not been implemented by GEND.

A GEND policy and program governing the use of procedures site-wide has not been developed and implemented. The computer based Manufacturing Interactive Document System used in the manufacturing area is a good system and with little modification can meet current industrial expectations in the preparation and control of procedures.

In addition, properly controlled technical documents and drawings and other operations related material are not readily available to the facility operators and engineering technicians/specialists.

The current EH&S Standard 2.9, "Lockout/Tagout Procedure," reissued August 1, 1989, does not meet the requirements of DOE 5483.1A and 29 CFR 1910.150.

The depth and breadth of knowledge possessed by operators in some facilities is not commensurate with acceptable industrial practices at facilities of comparable sophistication and complexity.

Many of the facilities at the Pinellas Plant pre-date the wide spread application of ergonomics. However, the use of human factors considerations in the design of future facilities and identification of installed equipment can reduce the potential for error.

Many of the programmatic deficiencies identified by this Operations appraisal had been identified by GEND in a recent self-appraisal. Based on the self-appraisal, GEND had undertaken a program to develop the necessary systems and implement corrective actions.

4.5.3.2 Findings and Concerns

OP.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Organization and administration should ensure effective implementation and control of operation activities.

- FINDINGS:**
- o Operations-related goals and performance indicators other than goals for product development and manufacturing production have not been established.
 - o Where goals and performance indicators exist, they are not always stated in terms that are measurable.
 - o Pertinent operations parameters are not trended and analyzed for all facilities.
 - o A documented program which provides for the establishment of operations goals and the attendant monitoring has not been prepared and implemented.
 - o Measurable safety goals and performance indicators are not used to effectively improve and monitor performance in the operations area.

CONCERN: See Concern OA.3-1.

- FINDINGS:**
- o The position guides/hourly job analyses are not readily available to all employees.
 - o The position guides/hourly job analyses applicable to operations are not readily available in the work area. The documents are available in the offices of Human Resources.
 - o Although the responsibility and authority of each employee is written and discussed with the employee at performance evaluations, the responsibilities and authorities of each organizational position are not published in suitable form for the benefit of others who may need to know.

CONCERN: (OP.1-1)
(H3/C2) The responsibilities and authority of each position in operations are not contained in a formal document that is available to the employees. (See Concern OA.1-1.)

- FINDINGS:**
- o A policy and procedure addressing the use of posted operator aids does not exist.
 - o Posted operator aids are not reviewed by a cognizant authority as to technical content, consistency of use, application, and necessity.
 - o Posted operator aids were observed to be in many forms, including engraved plates, notes written in grease pencil on equipment, and notes penciled on "Post-It" paper.

CONCERN: Posted operator aids are not administratively controlled and, therefore, their use and posting throughout the facility is neither consistent nor verifiable with respect to validity or accuracy.
(OP.1-2)
(H2/C2)

OP.2 CONDUCT OF OPERATIONS

PERFORMANCE OBJECTIVE: Operational activities should be conducted in a manner that achieves safe and reliable operation.

- FINDINGS:**
- o Safety Analysis Report, "Expansion of Building 400 RTG Facility," Section 16, Summary Plan For Operating Procedures, states, "... Operating Instructions, Manufacturing Engineering Equipment Instructions, Process Change Notices, Test Equipment Operating Instructions, Shop Operations Instructions, Material Operations Instructions and Quality Control Instructions. All these instructions have a mandatory annual review. To ensure that this is accomplished, a monthly Exceptions Report is published, showing all instructions which have not been reviewed during the past 11 months." The review is currently not being performed, and the monthly Exception Report is not being prepared.
 - o The OSRs contained in the SARs for the site facilities are not identified as safety related in the applicable Operating Instructions, Manufacturing Engineering Equipment Instructions, and Calibration Procedures; nor are they tracked in a document control system which identifies the documents satisfying the requirements.

CONCERN: A system is not in place to ensure that the facilities are always in compliance with all requirements of the Safety Analysis Reports.
(OP.2-1)
(H2/C2)

- FINDINGS:**
- o All changes in equipment status and the time at which the changes occurred were not always entered in the operations logs.
 - o Log books were not signed and dated by supervisors to indicate their review as required by Utility Operating Instruction 1.107, "Log System."
 - o Log entries were not always explicit enough to permit the reconstruction of facility status at any given time.

CONCERN: Log-keeping practices do not adequately convey the facility status and are not always in accordance with operating instructions.
(OP.2-2)
(H3/C2)

OP.3 OPERATIONS PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Approved written procedures, procedure policies and data sheets should provide effective guidance for normal and abnormal operation of each facility on the site.

- FINDINGS:**
- o Some facility Operating Instructions and equipment operating procedures were not dated, were not formally reviewed and approved, and pages were not numbered.
 - o Most changes to Operating Instructions and Manufacturing Engineering Equipment Instructions do not receive an independent technical review.
 - o Procedures do not always contain precautions and safety considerations applicable to the specific operation addressed by the procedure.
 - o Equipment Emergency Procedures developed outside the Manufacturing Interactive Document System are being used in a Manufacturing area. (See Concerns EP.2-3 and OA.7-2.)
 - o The format of Operating Instructions used in Bldg. 500 was not consistent.
 - o Utility Operating Instructions do not address the operation of facilities under other than normal conditions.

CONCERN: See Concern OA.7-3.

- FINDINGS:**
- o The position guide for Production Coordinator in the area of specific tasks states, "Assure that all fabrication/operating procedures are accurate and current to meet work intent, quality and safety requirement."
 - o The position guide for Process Planner in the area of broad function states, "Utilizing guidance from the Process Engineer, provide for the adequacy, efficiency effectiveness and planned use of current production facilities. Interpret drawings and specifications into basic operating instructions for economical manufacture of released products, including necessary tools, processes and equipment," and in the area of principal responsibilities states, "Under the guidance of the Process Engineer, specify, provide and maintain basic operating instructions...."
 - o The Operation Instruction Manual charges the Process Planner with the responsibility for preparing, revising, and approving operating procedures.
 - o The Operation Instruction Manual does not require that Operating Instructions be reviewed or approved by the

Process Engineer, Production Coordinator, or engineering personnel that make a significant technical contribution to the Operating Instructions.

CONCERN: (OP.3-1)
(H3/C2) A documented system requiring the review and approval of operating procedures by all personnel charged with assuring the adequacy of the procedures does not exist. (See Concern OA.7-3.)

- FINDINGS:**
- o Drawings retained in the work area reflecting changes to safety equipment were not current or under document control.
 - o Drawings of modifications and additions to some equipment control systems did not exist.
 - o Technical manuals and drawings associated with major systems and equipment were not available to the facility operators and engineering technicians/specialists in the work place at most facilities.
 - o Indices of procedures and drawings applicable to a facility are not maintained at each facility.

CONCERN: See Concern OA.7-2.

- FINDINGS:**
- o Numerous manuals and documents used in operations are not under a document control system, nor are changes controlled.
 - o The controlled set of Disaster Control Drawings issued on January 5, 1990 is missing the drawing for Area 349 Substation Number 6.
 - o Two revisions (March 8, 1984 and September 3, 1987) of the "Emergency Plan" were in use in Bldg. 400.
 - o M. L. McCormick is listed as "Floor Manager" in the Bldg. 400 "Hurricane and Tornado Emergency Plan," September 20, 1989, and is listed on the Bldg. 400 emergency contact list. McCormick left the position and the facility in October 1989.
 - o The SAR in use by the Senior Production Engineer in a facility was not identified as to issue date; the staff believed it was prepared during the 1970s. The latest revision was issued in 1982.
 - o The annual review of all Operating Instructions as required by Manufacturing Instruction 6.203 is not being conducted.

CONCERN: See Concern OA.7-2.

OP.4 FACILITY STATUS CONTROLS

PERFORMANCE OBJECTIVE: Operations personnel should know the status of the systems and equipment under their control, should know the effect of non-operational systems and equipment on continued operations. They should ensure that systems and equipment are controlled in a manner that supports a safe and reliable operation.

- FINDINGS:**
- o Most facilities did not post the current facility status at a central location.
 - o The acceptable operating status of facilities and supporting equipment were not defined.
 - o A safe operating envelope for facilities and major systems based upon the requirements of the SARs and manufacturer's requirements has not been developed.
 - o Policies and procedures defining controls for determining facility status did not exist.

CONCERN: Standards and directives providing a clear, concise statement of acceptable operating status for facilities and major systems have not been established.
(OP.4-1)
(H3/C2)

- FINDINGS:**
- o Status indicating lights were not functioning in several facilities. In some instances the operators were not aware of the condition; in those instances where the operators were aware of the condition, no corrective action had been initiated.
 - o A meter indicating the status of a system was found inoperative. The meter was apparently destroyed when piping was removed from the area several days earlier. The operator was unaware of this condition.

CONCERN: The monitoring of systems and equipment by operations personnel in some facilities is not consistent with acceptable standards.
(OP.4-2)
(H2/C2)

- FINDINGS:**
- o Serialized locks are not being used to lock out equipment as required by EH&S Standard 2.9, "Lockout/Tagout Procedures," reissued August 1, 1989.
 - o Yellow tags were used to tag out several valves in a pressurized water system, which would have presented a significant danger to personnel working in the area had the valves been opened. EH&S Standard 2.9 dictates that red tags be used "... for the protection of personnel working on or near the equipment."

- o EH&S Standard 2.9, "Lockout/Tagout Procedures," reissued August 1, 1989, does not require a log to be kept of all equipment that is locked out and tagged out.
- o No evidence was found that lock and tag status is periodically reviewed.

CONCERN:
(OP.4-3)
(H2/C1)

EH&S Standard 2.9, "Lockout/Tagout Procedures," reissued August 1, 1989, is not being enforced and does not meet the requirements of DOE 5483.1A and 29 CFR 1910.150.

OP.6 OPERATOR KNOWLEDGE AND PERFORMANCE

PERFORMANCE OBJECTIVE: Operator knowledge and performance should support safe and reliable operation of the equipment and systems for which they are responsible.

- FINDINGS:**
- o Several operators were not aware of the system, equipment or function associated with a status light on a control room panel.
 - o An operator responsible for monitoring the Tritium Recovery System had not read the associated Operating Instructions.
 - o Several operators did not know how to shutdown equipment in off-normal or emergency conditions.

CONCERN: (OP.6-1)
(H2/C2) The depth and breadth of operator knowledge at some facilities are not commensurate with acceptable industrial practices at facilities of comparable sophistication and complexity. (See Concern TC.1-1.)

- FINDINGS:**
- o No formal operator training program, established curricula, or qualification program exist.
 - o Operators are considered qualified when the supervisor deems they are qualified. On-the-job training is informal and qualification checklists are not used.
 - o In numerous cases, job-related training, such as radiation worker training, was provided only after the operator assumed the position requiring the training. (See Concern TS.3-1.)
 - o In several instances, new systems and equipment were placed in service prior to providing training on the new systems to the operators.

CONCERN: See Concern TC.1-1.

OP.7 SHIFT TURNOVER

PERFORMANCE OBJECTIVE: Turnovers conducted for each shift station should ensure the effective and accurate transfer of information between shift personnel.

- FINDINGS:**
- o Tagout/lockout logs were not reviewed as part of the shift change process.
 - o Shift turnover checksheets or similar formal guidance were not used to facilitate shift turnover in all facilities.

CONCERN: GEND has not implemented a documented shift turnover program at all facilities.
(OP.7-1)
(H3/C2)

OP.8 HUMAN FACTORS

PERFORMANCE OBJECTIVE: Human factors considerations should be incorporated in the design, layout and operation of all facilities on the site in order to facilitate operator control, information processing, and the recognition and proper response to alarms, instruments, and other equipment.

- FINDINGS:**
- o Labeling of controls and displays is not consistent in format and legibility.
 - o Nomenclature used is not standardized.
 - o Color coding of alarm lights and status lights is not consistent within or between facilities.
 - o Numerous ventilation ducts and equipment are not adequately marked and identified.
 - o Many instruments, switches, and status lights were not identified and labeled.
 - o Numerous controls and displays were labeled with grease pencils or felt tip pens.
 - o A reach-rod to facilitate operation of a group of electrical breakers located in the overhead was not available in the immediate vicinity of the breakers.

CONCERN: GEND has not fully implemented a program addressing human factors conventions and standards.
(OP.8-1)
(H2/C2)

4.5.4 Maintenance

4.5.4.1 Overview

This appraisal addressed all Performance Objectives in the Maintenance category. The maintenance functions at GEND are formally defined, structured to provide effective and safe corrective and preventive maintenance, and, with few exceptions, appear to be staffed at an appropriate level. A positive work attitude was exhibited by the first-line crafts persons and effective communications (including safety information) was seen to flow both up and down the management chain. The importance of doing the job safely was stressed by managers (including the first-line foremen), and all maintenance workers interviewed corroborated this management statement. Several of the maintenance people have submitted safety suggestions (one submitted over 100 suggestions) and monetary recognitions of accepted suggestions have been made. Cooperation and coordination with support groups such as the Environmental, Health, and Safety organization in carrying out maintenance work was evident. Support was given to two concerns (stated in the OA section of this report) regarding the organization and administration of the Maintenance Department: 1) the stated safety goals and performance were not measurable nor emphasized in administrative documents; and 2) timely feedback of injury data to maintenance supervision was not being done.

Sufficient management controls (Work and Shop Orders, Work Permits, Special Procedures, etc.) are in place to promote the safe execution of maintenance work. The workers appeared proficient in their work discipline and examination of their personnel files showed that proper credentials supporting their craft exist. The good information exchange between the workers and the maintenance planners ensured that proper materials, sequencing, and completing and closing out Work and Shop Orders occurred. A concern about instances of abandoned-in-place lines in crawl spaces is raised, however.

Housekeeping in the maintenance shop areas was very good. Sufficient tools, equipment and materials are available to do most work; special material orders are sometimes required. The lack of a central maintenance storage and staging area coupled with the fact that some material storage has been relegated to the outside has prompted a concern.

The use of dedicated planners located in the maintenance headquarters area results in effective scheduling, prioritization, job scoping, materials identification, and work close-out with effective records retention in the maintenance area. This planner/foreman interface also ensured the inclusion of special safety practices to be employed by maintenance workers in doing a specific job.

The plant condition is satisfactory: lubrication quality (no oil leaks noted), electrical, and mechanical systems generally appeared in good condition. The plant inspections are performed and documented and support a safe operating environment except that elements of an inspection program of the type suggested in DOE 4330.4 are not in place.

A well-documented preventive maintenance program includes computer-controlled scheduling, and maintenance staff completion and feedback provisions. A limited amount of predictive maintenance is performed with the development of

infrared scanning for identifying circuit problems being underway. There were two concerns determined in the preventive maintenance area: 1) the generation and updating of preventive maintenance schedules are not timely; and 2) there is equipment throughout the plant which requires periodic maintenance that is not on the preventive maintenance schedule.

The retention of maintenance documents and records meet the requirements of DOE 1324.2. The preparation of procedures is performed by planners who have graduated from the crafts ranks. These procedures are of sufficient detail to be used by the craft worker and problems due to erroneous or incomplete procedures or unexpected conditions are effectively resolved by the foreman/planner dialogue.

4.5.4.2 Findings and Concerns

MA.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Maintenance organization and administration should ensure effective implementation and control of maintenance activities.

- FINDINGS:**
- o Maintenance Department employees do not have, as part of their performance review or projected goals, a measurable safety performance indicator.
 - o In the Exempt Performance Appraisal (FC-1170), Safety is lumped into "Other" at the bottom of the Key Factors Affecting Performance (Part II).
 - o The Hourly and Non-Exempt Performance Appraisal form (FC-1493) mentions safety only in the Final Performance Factor "Work Habits: Conformance to rules and work practices (Safety, Security, Time Application, etc.)."

CONCERN: See Concern OA.3-1.

- FINDINGS:**
- o Maintenance personnel are required to report to the medical department upon receiving any injury. This practice seems to be followed, but no feedback or other assessment of these events is evident.
 - o The group safety coordinator (an appointed rotating position) receives total plant gross statistics (not broken down by type or organization) once a month.
 - o Supervisors are not provided any feedback regarding their work units' safety performance. As a consequence, trend assessment to assist managers is impossible. The timely identification of safety-related practices, equipment, or personnel deficiencies is thus impaired.

[Note: After this was pointed out by the S&H Subteam, the contractor formally initiated transmittal of such data to maintenance supervision in a January 18, 1990 memorandum.]

CONCERN: See Concerns OA.2-2 and OS.4-2.

MA.2 CONDUCT OF MAINTENANCE

PERFORMANCE OBJECTIVE: Maintenance should be conducted in a safe and effective manner to support each facility condition and operation on the site.

- FINDINGS:**
- o While observing some maintenance on a duct system in the crawl space of Bldg. 100, a line labeled HYDROGEN was noted. An uncapped vertical tube extended from a plenum that was valved at both ends. After maintenance personnel checked it out, it was determined that the line was "abandoned in place" during an earlier renovation project.
 - o A few feet away, an uncapped 2-inch line was projecting from the crawlspace floor. It too was an "abandoned in place" structure.
 - o Neither of these "abandoned in place" lines was indicated as being present in the as-built facility drawings.

CONCERN: Removal of facilities or equipment no longer in service has not been verified for completion in all instances at GEND. (See (MA.2-1) Section QV.6.)
(H2/C2)

MA.3 MAINTENANCE FACILITIES, EQUIPMENT, AND MATERIAL

PERFORMANCE OBJECTIVE: Facilities, equipment, and material should effectively support the performance of maintenance activities.

FINDING: o There were two instances of saw guards not in use or unavailable in the maintenance shop.

CONCERN: See Concern OS.5-1.

FINDINGS: o Maintenance storage and staging areas for their materials and equipment are fragmented (some being located in parked trailers) and not all are protected from the weather.

o The Maintenance Department stores some material outdoors; there have been instances where stock metal has degraded to the extent that it had to be scrapped and where wooden spools of wire that were stored outdoors had virtually disintegrated due to weather exposure.

CONCERN: A protected, centrally located facility does not exist to support maintenance storage and staging activities.
(MA.3-1)
(H3/C2)

MA.5 CORRECTIVE MAINTENANCE

PERFORMANCE OBJECTIVE: The material condition of components and equipment should be maintained to support safe and effective operation of all facilities on the site.

- FINDINGS:**
- o The suggested inspection intervals stated in the Real Property Maintenance Management Inspection Program (as defined in DOE 4330.4) are not being met for all categories. Annual rather than quarterly inspections are performed for Electrical Substations, Steam and Hot Water Distribution Systems, Gas and Fuel Distribution Systems, and the Sewage Treatment System.
 - o Good industrial practice and inspection policies at other DOE sites would dictate that comprehensive inspection frequencies of this nature be performed more often than once a year.

CONCERN: The suggested inspection intervals stated in DOE 4330.4 are not being met.
(MA.5-1)
(H3/C2)

MA.6 PREVENTIVE MAINTENANCE

PERFORMANCE OBJECTIVE: Preventive maintenance should contribute to optimum performance and reliability of systems and equipment important to operations.

- FINDINGS:**
- o There exists a backlog of about 355 pieces of new equipment for which Preventive Maintenance Instructions (PMIs) have not been issued.
 - o The lack of PMIs (and subsequent recall schedules) makes preventive maintenance (PM) on these items uncertain.
 - o Based upon discussions with PM staff, many PMIs are obsolete.

CONCERN: (MA.6-1)
(H3/C2) Generation and updating of Preventive Maintenance Instructions are not being performed in a timely manner.

- FINDINGS:**
- o Poor operation (loose belt, poor bearing, leaking gasket, etc.) was noted for several air handling systems atop Bldg. 400. (See Concern AX.5-2.)
 - o Machinery or equipment, such as the items cited above, should be included in the Preventive Maintenance Program; however, examination of the data bank for preventive maintenance showed that these items were not included.
 - o Interview with the Facility Inspector indicated that one or two items a month were found that probably should be on the PM schedule. The assignment of a full-time Facility Inspector was in effect for only about 3 months prior to the S&H Subteam appraisal, so a full plant-wide assessment of preventive maintenance at GEND is not yet complete.

CONCERN: (MA.6-2)
(H3/C2) All equipment requiring preventive maintenance has not been identified.

- FINDING:**
- o The recently designated Preventive Maintenance (PM) Advanced Specialist responsible for PM Time Standards has no experience nor training in this area. Training for this function is scheduled for 1991.

CONCERN: See Concern TC.1-1.

4.5.5 Training and Certification

4.5.5.1 Overview

This appraisal addressed all applicable Performance Objectives in the Training and Certification category. The Quality Control Inspector and Nondestructive Examination Technician Performance Objective is covered under the Quality Verification category. The Simulator Training/Facility Exercises Performance Objective is addressed in the Emergency Preparedness category.

A significant amount of training of personnel occurs at the Pinellas Plant. Most of this training is accomplished in an informal manner. The S&H Subteam found a wide variety in the types of training and quality of training. In many areas the training being provided is effective, even if informal; however in other areas the training programs were non-existent or not up to the DOE standards.

The training and qualification or certification requirements are not formally established for most assigned job tasks. Many of those requirements that do exist have not been established on a systematic basis.

In the fall of 1989, GEND hired a consultant to assess the training needs at the Pinellas Plant. Based on this assessment and on a critical self-assessment of training, a number of training deficiencies were identified. A long range plan has been developed to implement improvements in the overall training program.

A central training subsection (consisting of a Manager of Training and Education and a Training Coordinator) was created which does matrix with functional line organizations such as Engineering and Manufacturing. The long range plan has identified a need for additional staff in the central training organization to effectively implement the plan in a timely fashion.

The individual training records are generally not maintained in an auditable manner; the S&H Subteam did note that a system is under development for maintaining auditable records, and is partially implemented. Programs which have been incorporated into the computerized training records management system include "Toolbox," explosives, pressure, and HAZCOM safety training. These programs are administered out of the central training subsection and have auditable training records. The S&H Subteam found that most of these programs were of good quality and, on the basis of personal interviews, seem to be effective.

The "Toolbox" training program consists of modules developed by the central training subsection and are supplied to line managers. The line managers present these modules to employees to enhance safety awareness. The training program provided to radiation workers was also well documented and of good quality. GEND has taken initiatives to get employees involved in safety ownership through programs such as the "Safety Leader Program" and the "Pride In The Work Place Program."

There is no GEND policy/procedures manual or standard for training. As a result, there is considerable variability in each training program and in the way in which areas and supervisors administer training. Documentation of the

training programs is largely informal, although some programs, such as those mentioned above, have more formal documentation.

Floor Managers having the line responsibility for safety, do not receive in depth training in addition to that given to workers in areas such as radiation protection. Several Floor Managers interviewed by the S&H Subteam indicated a desire for more in depth training.

A finding is made with respect to training of maintenance personnel; this is addressed in the Maintenance performance category. In some work areas, personnel may be assigned to jobs without receiving job specific training. Supervisors indicated that personnel new to areas work with more experienced personnel until receiving job specific training and/or demonstrating proficiency in performing the work. This varies greatly from area to area; the Resins area was found to have a good program, whereas untrained utility operators were found to work unsupervised during back shifts.

GEND has begun to use interactive video as a training tool. Pilot programs exist for visitor safety orientation and for use in the Magnetics production area. Full use of the delivery methodology (i.e., audio, graphics, and highlighting of specific activities) to maximize the training benefit is still under development.

Supervisory personnel interviewed by the S&H Subteam appeared to have good management skills. This was verified through interviews with hourly operators.

Specific findings made during this appraisal are consistent with earlier findings made by GEND and their consultants. The findings are indicative that a substantial amount of improvement is required in the training program. Full and expeditious implementation of the training improvement plan is expected to address existing findings. The S&H Subteam believes that training is headed in the proper direction.

4.5.5.2 Findings and Concerns

TC.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The training organization and administration should ensure effective implementation and control of training activities.

- FINDINGS:**
- o Training and qualification/certification requirements are not formally established for most assigned job tasks. Those requirements that do exist are not established on a systematic basis.
 - o Individual training records are generally not maintained in an auditable manner. A system is under development for maintaining auditable records; however, its use is not fully implemented.
 - o Programs which have been incorporated in the computerized training records management system include "Toolbox," explosives, pressure, and HAZCOM training. These programs are administered out of the central training department and have auditable training records.
 - o There is no policy and procedures manual or GEND standards for training. As a result, there is considerable variability in each training program and the way in which areas and supervisors administer training.
 - o Documentation of the training programs is largely informal, although some programs such as those mentioned above have more formal documentation.
 - o GEND contracted with ORAU in the fall of 1989 to assess the training needs at the Pinellas Plant. Based on this assessment and on a critical self-assessment of training, a number of deficiencies and needs were identified. A plan has been developed to implement improvements in the overall training program.
 - o A central training department was created which does matrix with functional line organizations such as Engineering and Manufacturing. Staffing of the central training department has yet to be completed.
 - o See Section TS.6.

CONCERN: Training at the Pinellas Plant is not supported by GEND policy and standards and is not formally established uniformly across the plant.
(TC.1-1)
(H1/C1)

TC.4 GENERAL EMPLOYEE/PERSONNEL PROTECTION TRAINING

PERFORMANCE OBJECTIVE: General employee and personnel protection training programs should ensure that site/facility personnel, subcontractors and visitors have an understanding of their responsibilities and expected safe work practices, and have the knowledge and practical abilities necessary to effectively implement personnel protection practices associated with their jobs.

- FINDINGS:**
- o GEND has no formal policy on how to handle employees who fail safety examinations. There is no GEND policy on standards for testing of employees.
 - o There is considerable variation in the degree and quality of the training provided by different managers.
 - o GEND has not defined or assigned an oversight role for monitoring training.
 - o The S&H Subteam found the Bldg. 1400 Remote Receiving training program to be of good quality. The supervisor in the area indicated that funds for maintaining this quality training program were difficult to obtain.
 - o Operators may be assigned to a job position before receiving training for the job; however, supervisory personnel interviewed by the S&H Subteam indicated that workers newly assigned to areas work under the guidance of experienced operators or managers until adequately trained.
 - o Based on interviews with several floor managers, workers are supposed to receive specific job training within a 1 to 6-month period of being assigned to an area. This is not a formal GEND policy. Several floor managers interviewed by S&H Subteam members indicated that employees ought to be required to demonstrate job proficiency or knowledge about equipment and operations before being permitted to work without close supervision.
 - o The S&H Subteam found that the pressure safety training and the spinner safety training programs were of good quality.
 - o The fork-lift truck training program appears to be of good quality and meets OSHA requirements. This training is provided by vendors and by GEND personnel. Fork-lift truck operators were required to demonstrate their proficiency.
 - o The S&H Subteam found that the QA lead auditors were trained and knowledgeable; however, the training program for the lead auditors was informal. (See Section QV.1.)

- o A utility operator responsible for monitoring the Tritium Recovery System had received no training on that system. This operator was not under supervision during the back shifts.
- o See Sections OS.6 and OP.6.
- o Examples of informal or non-existent training found by the S&H Subteam include the following:
 - Cryogenic training,
 - Hoisting and rigging training,
 - Power press OSHA operator training, and
 - Confined space entry training.

CONCERN: See Concern TC.1-1.

TC.9 RADIOLOGICAL PROTECTION PERSONNEL

PERFORMANCE OBJECTIVE: The radiological protection personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

- FINDINGS:**
- o Radiation worker training is provided by the plant health physicists. This consists of 4 hours of instruction which must be taken by radiation workers once every 2 years. This satisfies the requirements of DOE 5480.11 for radiation worker training.

 - o Supervisory personnel responsible for radiation areas do not receive training beyond that provided to radiation workers. This was indicated to be a deficiency by the plant health physicist and radiation area supervisory personnel interviewed by the S&H Subteam.

CONCERN: See Concern TC.1-1.

4.5.6 Auxiliary Systems

4.5.6.1 Overview

Four of the nine auxiliary system Performance Objectives were evaluated during this appraisal: System Requirements, Effluent Holdup and Treatment, Solid Wastes, and Ventilation Systems. The remaining five performance objectives were not considered applicable to GEND.

The existing auxiliary systems for water, electricity, and heat removal have adequate reserve to meet peak seasonal demands and the anticipated growth in load expected from the planned expansion of facilities.

The auxiliary systems and the facilities in which they reside are neat, clean, and well maintained with the exception of the ventilation systems, which are not maintained in a manner consistent with current industrial practices.

At GEND most auxiliary systems for water, electricity, heat removal, and ventilation have not been identified as important to safety. In cases where auxiliary systems have been identified as critical to facility safety, the SARs do not bound the demands placed on the auxiliary systems in measurable terms.

The capacity of the ventilation systems at most facilities is adequate. The volume of fresh air supplied to Bldg. 100, however, is marginal and should be increased.

Gaseous and liquid discharges of hazardous and radioactive waste are treated and monitored. Some waste minimization practices are utilized; however, a formal GEND program, through which goals are set and progress is monitored, has not been implemented.

GEND has moved quickly to address the issues raised in the area of auxiliary systems. Where possible GEND has taken action to correct many of the findings and concerns.

4.5.6.2 Findings and Concerns

AX.1 SYSTEMS REQUIREMENTS

PERFORMANCE OBJECTIVE: Auxiliary systems should be considered under the same functional criteria for design, engineering, operations, maintenance, and modifications as the structural, confinement, and primary process system of the facility.

- FINDINGS:**
- o The operational requirements for auxiliary systems, as specified in the SARs, are not adequately defined to ensure that the auxiliary systems are maintained within the appropriate operating envelope.
 - o A document delineating the functional criteria of each auxiliary system does not exist.

CONCERN: The functional requirements of each auxiliary system have not been developed and documented.
(AX.1-1)
(H3/C2)

AX.2 EFFLUENT HOLDUP AND TREATMENT

PERFORMANCE OBJECTIVE: Effluent holdup and treatment should ensure that the amount of hazardous substances released to the environment as escaping emissions and/or as effluent gaseous or liquid releases are less than DOE and EPA standards and are ALARA.

- FINDINGS:**
- o DOE 5400.3 and DOE 5820.2A require each DOE site to develop and implement a waste management plan.
 - o Goals based upon past results and anticipated operations have not been formulated for radioactive effluents and hazardous substance effluents.
 - o A documented periodic review of hazardous effluent and radioactive effluent records to determine trends is not performed.
 - o An ALARA program does not exist for the chemical hazards area.

CONCERN: GEND has not implemented a documented program to reduce the total hazardous substances discharged to the environment as required by DOE 5400.3 and DOE 5820.2A. (See Concern TS.5-1.)
(AX.2-1)
(H3/C1)

AX.3 SOLID WASTES

PERFORMANCE OBJECTIVE: Solid hazardous wastes (including radioactive wastes) should be controlled to minimize the volume generated, and handled in a manner that provides safe storage and transportation.

- FINDINGS:**
- o DOE 5400.3 and DOE 5820.2A require each DOE site to develop and implement a waste management plan.
 - o Goals based upon past results and anticipated operations have not been formulated for generation of solid radioactive waste and solid hazardous waste.
 - o A periodic review of hazardous waste generation records and radioactive waste generation records to determine trends is not performed.

CONCERN:
(AX.3-1)
(H3/C1) GEND has not implemented a documented program to reduce the solid hazardous waste and solid radioactive waste generated, as required by DOE 5400.3 and DOE 5820.2A. (See Concern TS.5-1.)

AX.5 VENTILATION SYSTEMS

PERFORMANCE OBJECTIVE: Ventilation systems should reliably direct all airborne effluents from contaminated zones or potentially contaminated zones through cleanup systems to ensure that the effluent reaching the environment is below the maximum permissible concentration and is ALARA.

- FINDINGS:**
- o Several air handling units and exhaust fans did not have OX Numbers assigned and hence had not been included in the preventive maintenance program.
 - o Ventilation systems flows and balance were not checked on a routine basis.
 - o Several unlabeled exhaust fans and exhaust fan EF-7 were vibrating excessively.
 - o An unlabeled air handling unit and AHU-113 had "noisy" bearings and loose fan belts.
 - o An air handling unit on the roof of Bldg. 400 had shifted on its mounts resulting in an excessive side load being placed on the mounts.
 - o Some drain pans, ducting, equipment mounting brackets and air handling units were rusted excessively.
 - o The linear airflow of all operational fume hoods is not checked on a semi-annual basis as required by EH&S Standard 5.2, Section 4.4.1.4.

CONCERN: The ventilation systems are not checked, tested, and maintained in a manner consistent with generally accepted industrial practices.
(AX.5-1)
(H2/C2)

- FINDINGS:**
- o The online exhaust stack monitors located in Bldg. 400 and Bldg. 100 were not designed in accordance with ANSI N13.1-1969, as referenced by DOE 5480.4, and ANSI N13.10-1974.
 - o The calibration and testing of the exhaust stack monitors located in Bldg. 400 and Bldg. 100 are not in accordance with ANSI N13.1-1969.

CONCERN: Online exhaust stack monitors have not been designed and tested in accordance with generally accepted engineering standards, ANSI N13.10-1974 and ANSI N13.1-1969.
(AX.5-2)
(H2/C2)

- FINDINGS:**
- o High efficiency particulate air (HEPA) filters are tested by the manufacturer and at Oak Ridge prior to forwarding to GEND. No testing of the filters is performed upon receipt by GEND.

- o In-place HEPA filter leak testing of HEPA filters located in exhaust systems is performed at GEND upon installation of a filter in a system. The leak test is performed in accordance with ANSI N101.1-1972 instead of ANSI N510-1980 as referenced by DOE 5480.4.
- o The two HEPA filters installed in series in the exhaust ventilation at Bldg. 400 are tested as though they were a single filter.
- o The HEPA filters installed in exhaust ventilation systems in Bldg. 400 and Bldg. 100 are not tested periodically.

CONCERN: High efficiency particulate air filters are not regularly tested in accordance with ANSI N510-1980.
 (AX.5-3)
 (H3/C2)

- FINDINGS:**
- o Fume hoods, when tested, are adjusted to provide a minimum flow of 100 linear feet per minute with the sash in the fully raised position.
 - o Fume hoods not equipped with an automatic flow control, when operated with the sash at a position other than fully raised, may operate in a turbulent flow region. Fume hood operation in a turbulent flow region may result in the formation of backwash areas and the attendant air leakage from the face of the hood.
 - o The range of fume hood sash positions associated with adequate laminar flow to ensure safe operation of the fume hoods is not identified for each hood.

CONCERN: The fume hood sash positions acceptable for safe operation of the fume hoods are not identified.
 (AX.5-4)
 (H2/C2)

4.5.7 Emergency Preparedness

4.5.7.1 Overview

This appraisal addresses all the Performance Objectives in the Emergency Preparedness category.

During the appraisal, several real emergencies occurred that provided the S&H Subteam with an opportunity to view the emergency preparedness function in action. The first incident involved a subcontractor who suffered a fatal heart attack. Emergency responders were quickly notified and on the scene. By all accounts, the emergency response was exemplary. In the second incident one of the GEND employees was taken ill and required emergency assistance. The response and subsequent documentation (i.e., incident report) were judged to be appropriate.

Although the emergency preparedness staff currently consists of a single individual, a high degree of professionalism is exhibited. A Master Emergency Plan, and Emergency Operation Center (EOC) implementing procedures exist as formal controlled documents; however, this is not the case for the emergency procedures in other areas (i.e., fire protection).

There has been no systematic and rigorous assessment of the hazards existing at the Pinellas Plant. GEND hired a consultant in 1989 to perform a qualitative hazard assessment. At this time the results of this initial hazard assessment have not been incorporated into the emergency plan and procedures, or used to systematically enhance the emergency program. One area requiring improvement is the development of emergency plans geared to specific facilities, areas, and operations.

Emergency equipment (i.e., self-contained breathing apparatus and stretchers) are stored in lockers which are not sealed. GEND cannot assure the readiness of their emergency equipment.

About once a month an exercise, drill, or table top game theory exercise is conducted by the Emergency Preparedness Program Manager. An exercise was designed by the Emergency Preparedness Program Manager at the request of the S&H Subteam. The S&H Subteam found that the exercise scenario, which involved the spill of a hazardous material coupled with a fire, was credible and that the exercise was well planned.

During the exercise the S&H Subteam observed that the EOC was manned and activities there were conducted in an orderly manner. The PAO manager was clearly in charge in the EOC and was assisted by recommendations from the GEND general manager. Consistent with the emergency plan, the Pinellas County HAZMAT and emergency personnel were called to the exercise scene. The Pinellas County emergency response personnel assumed control of the incident scene. Pinellas County emergency response personnel exhibited a high degree of professionalism in responding to the emergency.

The S&H Subteam noted deficiencies in the GEND field response, and concerns are raised about the level of emergency response training and GENDs ability to respond to a hazardous material leak. Many of the same findings made by the S&H Subteam were also noted by the GEND exercise controllers.

The inability of GEND to quickly assess the consequences during an emergency (i.e., from a plume of hazardous material) is also seen as a major deficiency.

A strength of the emergency preparedness program is the close relationship that the Pinellas Plant has with the Pinellas County Emergency Management Agency.

4.5.7.2 Findings and Concerns

EP.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Emergency preparedness organization and administration should ensure effective planning for, and implementation and control of, site/facility emergency response.

- FINDINGS:**
- o There is no GEND internal program for the independent review of the emergency management program at the Pinellas Plant.
 - o AL conducts an independent review of the emergency preparedness program. The last review was reported on October 14, 1988. This was limited to document reviews and did not include an exercise.

CONCERN: See Concern OA.2-2.

EP.2 EMERGENCY PLAN AND IMPLEMENTING PROCEDURES

PERFORMANCE OBJECTIVE: The emergency plan, the emergency plan implementing procedures, and their supporting documentation should provide for effective response to operational emergencies.

- FINDINGS:**
- o A formal site Master Emergency Plan as required by DOE N5500.5 exists and is described in "Pinellas Plant Master Emergency Plan Supplement to the Emergency Action Plan, Rev. 1," GEPP-SP-1078A, UC-700, December 1989.
 - o There is no SAR or safety assessment which encompasses all operations at the site. (See Concern OA. 7-1.)
 - o In 1989, GEND hired a contractor to make an initial attempt at systematically examining the risks associated with the plant's operations. "A qualitative analysis was made with conclusions believed to be valid but not definitive," according to the contractors report.
 - o The results of this initial hazards assessment have not been incorporated into the Master Emergency Plan.
 - o Multiple failures and unusual initiating events have not been addressed in the emergency plan. The plan is based on many years of experience and addresses broad classes of initiating events thought to be credible.

CONCERN: A systematic assessment of credible hazards at the Pinellas Plant has not been incorporated into the emergency plans.
(EP.2-1)
(H1/C2)

- FINDINGS:**
- o The emergency plan for Bldg. 400, the RTG Assembly Area, was prepared by the EH&S organization with some input from operational personnel responsible for the facility. The plan is geared to response to weather-related emergencies with only general information about other types of emergencies.
 - o The Bldg. 400 emergency plan does not specifically address hazards related to that facility. The Bldg. 400 emergency plan is not a formalized document (i.e., not a controlled document). (See Concern OA.7-2.)
 - o Emergency plans addressing hazards specific to operations and areas of the Pinellas Plant have not been developed in accordance with DOE N5500.5 or the draft DOE 5500.3A.

CONCERN: Formalized, controlled emergency plans specific to buildings, areas, or operations, as required by DOE N5500.5, have not been developed.
(EP.2-2)
(H1/C1)

- FINDINGS:**
- o Procedures describing operations within the EOC and satellite communications centers are found in "Pinellas Emergency Operations Center Operations and Procedures Manual," GEPP-SP-1108, June 1988.
 - o Emergency procedures for the fire brigade and fire protection personnel are described in informal documents. (See Concern OA.7-2.)
 - o An emergency procedure for the operation of the Furnace Work Station Number 712 in the neutron generator subassembly area was posted on the work station. The procedure was not dated, signed, or given a document control number. (See Concern OA.7-2.)
 - o An emergency call list was posted in the neutron generator subassembly area. There was no effective date on the call list. The area senior engineer indicated that the list was up-to-date.
 - o Emergency procedures for plant operations are informal and non-uniformly applied and do not satisfy DOE N 5500.5.
 - o See Concerns OP.3-1 and OA.7-2.

CONCERN: Formal, controlled implementing procedures for emergency actions (EP.2-3) are not established for all operations. (H2/C1)

EP.3 EMERGENCY RESPONSE TRAINING

PERFORMANCE OBJECTIVE: Emergency response training should develop and maintain the knowledge and skills for emergency personnel to respond to and control an emergency effectively.

- FINDINGS:**
- o Fire Brigade members have not been provided training for hazardous waste emergency response as required by OSHA Regulation 1910.120. (See Concern FP.6-1.)
 - o During the emergency exercise, the fire brigade members were on the incident scene within 5 minutes, and were in their protective gear seven minutes later. During a search of facilities near the incident scene, fire brigade members walked through the hazardous material spill.
 - o Members of the Emergency Spill Response Crew took more than twenty minutes to don the protective gear and SCBA equipment before initiating spill containment during the exercise conducted during the appraisal. Spill response members were observed by the Tiger Team to demonstrate a lack of familiarity with the equipment.
 - o Chemical spill response (HAZMAT) personnel had not received refresher training required by 29 CFR 1910.120 (1) (2). (See Section IH.5)
 - o See Section TS.6.
 - o A hazardous material spill is regarded by Pinellas Plant emergency preparedness personnel and the S&H Subteam as a credible event.
 - o Members of the Tiger Team observed that treatment of the victim during the emergency exercise did not fully address the potential injuries.
 - o A technically knowledgeable plant industrial hygienist did not arrive at the exercise incident scene until 40 minutes into the exercise.
 - o No attempt was made by persons initially responding to the exercise incident scene to characterize the nature of the hazardous material spill (e.g., place litmus paper in the spill to determine the presence of an acid).

CONCERN: GEND emergency response personnel performance did not demonstrate proficiency in handling spills of hazardous materials.
(EP.3-1)
(H1/C2)

EP.4 EMERGENCY PREPAREDNESS DRILLS AND EXERCISES

PERFORMANCE OBJECTIVE: Emergency preparedness programs should include provisions for simulated emergency drills and exercises to develop and maintain the knowledge and skills for emergency personnel to respond to and control an emergency effectively.

- FINDINGS:**
- o The fire brigade has not performed drills in over a year.
 - o The off-shift fire brigade volunteers have not participated in drills.
 - o Fire Brigade personnel do participate in major plant exercises.

CONCERN: See Concern FP.6-1.

EP.5 EMERGENCY FACILITIES, EQUIPMENT, AND RESOURCES

PERFORMANCE OBJECTIVE: Emergency facilities, equipment, and resources should adequately support site/facility emergency operations.

- FINDINGS:**
- o Emergency response equipment, such as Self Contained Breathing Apparatus (SCBAs) and stretchers, are maintained by the fire protection personnel. Lockers containing this equipment are not sealed.
 - o Two of the five SCBA lockers inspected by the S&H Subteam contained unauthorized equipment (Tyvek suits). Tyvek suits are used by emergency response personnel, but are not to be stored in the SCBA lockers according to GEND fire protection personnel. Tyvek suits are stored on the spill response and fire carts.
 - o See also Concern EP.3-1.

CONCERN: GEND cannot ensure the readiness of their emergency equipment.
(EP.5-1)
(H1/C2)

EP.6 EMERGENCY ASSESSMENT AND NOTIFICATION

PERFORMANCE OBJECTIVE: Emergency assessment and notification procedures should enable the emergency response organization to correctly classify emergencies, assess the consequences, notify emergency response personnel, and recommend appropriate actions.

- FINDINGS:**
- o A catalogue of pre-determined consequences from likely accidents (other than plutonium releases) is not available to the emergency response cadre. One of the plant health physicists has performed 50-year dose commitment calculations for plutonium releases using extremely conservative assumptions.
 - o Emergency procedures do not provide a basis for the determination of the conditions under which evacuation is necessary or required by DOE N 5500.5.
 - o The plant industrial hygienists are responsible for assessing the consequences of releases of hazardous materials.
 - o At the request of the S&H Subteam, a member of the Industrial Hygiene staff attempted to determine the consequences of a release of tungsten hexafluoride. The staff member was unfamiliar with the calculational tools available to him.
 - o During the emergency exercise conducted at the plant during the appraisal, several requests were made by the Emergency Operations Center (EOC) for data on the plume of hazardous materials. No quantitative plume dispersion information was made available to the EOC.
 - o A technical basis for assessing the consequences of a plume of hazardous material is not available to the Pinellas Plant.

CONCERN: GEND does not have the ability to assess the consequences for all credible emergencies.
(EP.6-1)
(H1/C1)

4.5.8 Technical Support

4.5.8.1 Overview

The scope of the Technical Support appraisal included performance objectives on Organization and Administration, Procedures and Documents, Facility Modifications, Environmental Impact, and Packaging and Transportation of Hazardous Materials. The other performance objectives did not apply at the Pinellas Plant.

The GEND technical support functions are effective; however, the success of these functions is the result of the dedication and hard work of experienced professionals. There is no formal training program for technical support staff. Document control, including availability of DOE Orders and the quality of Plant Facilities Operating Instructions is deficient.

Although facility modifications are reviewed (e.g., at weekly meetings), GEND does not have a defined system, or procedures, for the facility modification process.

The EH&SP "green sticker" program, although not formalized, is the basis for operational readiness reviews. In performance of these functions, EH&SP is performing a line-safety function.

GEND ships a variety of hazardous materials, hazardous substances, and hazardous wastes offsite. A review of recent shipping records indicates that the shipments comply with DOE 5480.3, which mandates compliance with 49 CFR 100-199. The shipments are not in compliance with DOE 1540.1 regarding emergency preparedness for response to DOE cargoes that may be involved in offsite incidents.

Hazardous materials are shipped by three organizations: Production Planning and Scheduling (Shipping), Receiving and Traffic, and Waste Management. Hazardous materials are received by two organizations: Receiving and Traffic, and Production Planning and Scheduling (Shipping). Although there is some coordination among the various groups, there is no single point contact responsible for all shipments made by GEND.

Symptomatic of the PT decentralization are differences noted in the shipping papers prepared by the above mentioned organizations. Compliance with the Emergency Notification requirement of DOE 1540.1 varied from total non-compliance to providing telephone numbers which were not 24-hour telephone numbers. This resulted in a Category II Concern.

There are no requirements that GEND personnel who handle, store, package and transport hazardous materials receive initial or recurrent training. However, based upon a review of training records, the training is current. Also, based upon interviews and their excellent, safe shipping record, GEND PT personnel are competent. Some of their training, namely, 49 CFR 100-199, is obtained offsite. Some is obtained onsite, and most via OJT. In general, the OJT is not supported by lesson plans, check lists, or the like. There is no requirement that instructors be certified, or that they receive additional technical training or instructor training.

Although vehicles used to transport hazardous materials are properly maintained, there is no requirement that they be subjected to daily safety checks, even if transporting hazardous materials offsite.

4.5.8.2 Findings and Concerns

TS.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The technical support organization and administration should ensure effective implementation and control of technical support activities.

FINDING: o There is no formal training program for personnel assigned to technical support functions.

CONCERN: See Concern TC.1-1.

TS.2 PROCEDURES AND DOCUMENTS

PERFORMANCE OBJECTIVE: Technical support procedures and documents should provide appropriate direction, allow for adequate record generation and maintenance for important activities, and should be properly and effectively used to support safe operation of all facilities on the site.

- FINDINGS:**
- o Although current copies of "Design Criteria," DOE 6430.1A (4-6-89), were available in the Construction Projects office, copies were not available in Facilities Engineering, the GEND library, or PAO.
 - o Plant Facilities Operation Instructions (FOIs) (many dated January 10, 1990) do not reflect all organization changes made in December 1989.
 - o Many FOIs reviewed by the S&H Subteam were published and issued in early January 1990. Many were new instructions, and because of their recent implementation, the S&H Subteam was unable to determine their effectiveness.
 - o There is no requirement that FOIs be reviewed routinely.
 - o Approximately 95 percent of floor plan drawings are as-built. Approximately 50 percent of facilities drawings are as-built. An initiative to update all as-built drawings was begun in January 1988. The project is expected to be completed in late 1990. (See Section MA.2)

CONCERN: See Concerns OP.3-1 and OA.7-2.

TS.3 FACILITY MODIFICATIONS

PERFORMANCE OBJECTIVE: Technical support services required by each facility on the site to execute modifications should be carried out in accordance with sound engineering principles that should assure proper design, review, control, implementation, and documentation in a timely manner.

- FINDINGS:**
- o GEND does not have a defined system, or procedures, for conducting operational readiness reviews; however, good business practices would mandate that GEND institute operational readiness reviews.
 - o The EH&SP "green sticker" program requires EH&SP to sign-off on a new or modified facility prior to start-up. Currently, it is not a formalized program; however, GEND intends to modify GOP G.1.06 to address this issue. Verification of facility installation is done by EH&SP. In performance of these functions, EH&SP is functioning as a line organization. (See Concern OA.2-1.)
 - o Facility modifications are coordinated by informal weekly meetings. A GOP is being drafted to institutionalize the facility modification review process.
 - o Installation requirements are included as part of the modification design; however, this is not formally documented.
 - o There is no requirement that site/facility personnel be thoroughly trained prior to operating modified systems. Personnel in some organizations do receive OJT prior to start up. (See Section OP.6 and Concern TC.1-1.)

CONCERN: There is no program to control facility modifications.
(TS.3-1) (See Concern QV.3-2.)
(H3/C2)

TS.5 ENVIRONMENTAL IMPACT

PERFORMANCE OBJECTIVE: The impact on the environs from the operation of each facility on the site should be minimized.

- FINDINGS:**
- o DOE 5400.1, DOE 5400.3, and DOE 5820.2A establish policies and minimum requirements for DOE waste programs. All require a waste minimization plan.
 - o GEND GOP A.6.12 (December 1, 1982), "Hazardous Waste Management," requires the development of "... long range plans to reduce the Department's hazardous waste to nonhazardous forms where practical." It also requires the development and administration of "... a plan to assure Department-wide participation in the hazardous waste management program." GEND has not developed a waste minimization plan.
 - o GEND GOP G.1.20 (January 12, 1990) requires, "Establish and maintain a waste minimization program." Although many waste minimization practices have been implemented, and have been successful, the waste minimization program is not documented, goals are not established, and trending is not documented.
 - o The GEND Waste Minimization Committee does not have a charter.
 - o There is no program to minimize the volume of solid radioactive waste (e.g., ventilation ducting) from decontamination and decommissioning (D&D) activities.

CONCERN: The GEND Waste Management Program is not in compliance with DOE (TS.5-1) 5400.1, DOE 5400.3, and DOE 5820.2A (September 26, 1988). (h3/C1) (See Concern AX.3-1.)

TS.6 PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS

PERFORMANCE OBJECTIVE: Performance of the packaging and transportation (PT) functions should ensure conformance with existing standards and accepted practices as given in DOE 5480.3, and other DOE and Federal regulations.

- FINDINGS:**
- o A DOE-HQ Packaging and Transportation, Explosives Field Review (April 1989) states, "...concurred with the contractor's efforts to focus the packaging and transportation shipping functions into a single organization to avoid fragmentation."
 - o The Pinellas Self Assessment, Chapter 11, "Handling of Hazardous Commodities" (January 15, 1990) states, "Review the traffic function to establish a more focused organizational structure."
 - o Several draft GOPs, including A.4.07 and A.4.08, and draft MIs 4.907 and 4.909 address the "fragmentation" issue; however a "single organization" is not implied or identified.
 - o GEND packaging and transportation functions have not been focused into a single organization.
 - o The GEND PT fragmentation has been manifested in noncompliance with DOE 1540.1, which requires the designation of an emergency telephone number on all shipping papers for hazardous materials shipments. Shipping papers from the various GEND shipping organizations revealed: some did not list a phone number, some listed office and home phone numbers of key employees, while others listed the phone number of the security office. (See Concern TS.6-6.)

CONCERN: GEND has not established a single point contact for packaging and transportation functions.
(TS.6-1)
(H3/C2)

- FINDINGS:**
- o DOE 5480.3 and DOE 5482.1B require routine audits of packaging and transportation, and contractor internal appraisals, respectively. AL 5480.3 requires contractors to perform internal, annual audits of PT functions.
 - o A recent internal audit, "Traffic and Transportation Audit" (December 1989), was conducted by the Financial Section and included mainly the financial aspects of traffic functions. It did not include all the safety aspects of all GEND PT functions.
 - o Deficiencies in the GEND internal audit program were noted in the AL Packaging of Hazardous Materials Safety Appraisal (February 1989). The deficiency has not been corrected.

- o There is no GEND program for internal appraisals of all PT functions similar to the requirements of MI 5.502.
- o DOE 5700.6B (NQA-1) requires quality assurance audits of contractor operations.
- o Although a GEND Plant Services memorandum (September 19, 1989) states, "GEND is taking action... to review the need for Quality Assurance to be trained to DOT regulations." Not all GEND appraisers who perform PT appraisals have received PT training.
- o Hazardous Waste operations were audited by Quality Assurance (July 1989). The audit remains open.
- o PAO (October 1988) and GEND (August 1989) have conducted Quality Reviews of selected organizations, generally for WR-products; however, sufficient quality reviews of PT functions for products, other than weapons, have not been accomplished.

CONCERN: The GEND quality assurance audits and internal appraisal programs (TS.6-2) do not meet all the requirements of DOE 5700.6B, DOE 5480.3, (H3/C1) DOE 5482.1B, and AL 5480.3. (See Concerns OA.2-2 and FR.1-1.)

- FINDINGS:**
- o A DOE-HQ Packaging and Transportation, Explosives Field Review (April 1989) noted, "...unable to identify a linear hierarchy of policies and/or procedures which outline the direction and need for such compliance." Although some policies and procedures have been developed, an audit trail of policy back to the DOE Orders is incomplete.
 - o There is no GEND policy or procedure that requires that an employee must be qualified for a particular job or how such qualification should be achieved and/or demonstrated. There is no requirement or mechanism to keep employee knowledge up-to-date through recurrent training.
 - o There is no policy of what to do with an employee if training is not completed, or an examination is failed.
 - o GEND ships and carries hazardous materials to McDill AFB to meet the Ross Aviation schedule. There is no requirement that the vehicle be given a safety check (e.g., turn signals, horn, or backup signal) before departing GEND. There is no requirement that hazardous materials cargos be "blocked and braced," or otherwise secured, during transit.
 - o The load bed of the Government truck used to make deliveries to Ross Air is approximately 3 feet lower than the cargo deck of the DOE C-9 aircraft. As observed by the S&H Subteam, it is difficult to transfer heavy and/or bulk items between the truck and the plane. The limited opening in the DC-9 cargo bay and the location of the cargo hatch in its

open position exacerbate the cargo transfer operation. (See Concern IH.1-2.)

- o There are no procedures for attaching locking rings on drums of hazardous waste. Drums with improperly attached locking rings were observed in the hazardous waste area.
- o There is no GOP for implementation of DOE 1540.2.
- o EH&SP Standard 8.1, "Chemical Waste Disposal," establishes standards for chemical waste disposal; however, there are no implementing procedures for waste management personnel.
- o Although GOP A.1.01 requires that GOPs be reviewed annually, there is no GEND requirement that procedures be subjected to routine review. (See Section OA.7.)
- o GEND GOP, G.1.11, "Shipment of Radioactive Materials," requires, "... shipment in accordance with Title 49 CFR." Although there is a Receiving and Traffic desk procedure for non-radioactive hazardous materials, there is no analogous GOP for hazardous materials which are not radioactive.

CONCERN: GEND policies and procedures for handling, packaging, and shipping hazardous materials, substances, and wastes do not meet all requirements of DOE 5480.1A, DOE 5480.3, DOE 5480.4, DOE 1540.1, and DOE 1540.2.
(TS.6-3)
(H3/C1)

- FINDINGS:**
- o DOE 5480.1B (September 23, 1986) requires "... overview of environment, safety and health ... independent of line management responsibility."
 - o A review of available records and an interview with EH&SP staff indicate that safety oversight does not include all aspects of PT operations.
 - o Hazardous Waste Management is a line-function assigned to EH&SP, thereby negating effective EH&SP safety oversight.

CONCERN: See Concern OA.2-1.

- FINDINGS:**
- o DOE 5480.3 does not adequately address the safety aspects of intrasite movements of hazardous materials, hazardous substances, and hazardous wastes (including radioactive, mixed, and hazardous wastes); therefore, DOE 5480.1A has been used to evaluate the overall safety aspects of GEND intrasite movements of these materials.
 - o GEND "Pinellas Plant On-Site Packaging and Transportation of Hazardous Commodities Plan" (April 1988) has not been updated to include operations of Remote Receiving, Bldg. 1400, which became operational in June 1989. The plan cites DOE 5480.1, Chapter III, "Safety Standards for the Packaging of Fissile and Other Radioactive Materials," which was

cancelled in July 1985. Several other deficiencies, including inconsistencies in definition of terms and lack of some procedures, were discussed with GEND representatives.

- o There is no requirement that drums of hazardous materials be secured to pallets or to the forklift during transit by forklift.
- o EH&SP Standard 5.10 (May 23, 1984), paragraph 5.2.11, states, "Vehicles must be surveyed by Health Physics before unloading...." Some incoming packages of radioactive materials, received by Remote Receiving at Bldg. 1400, are not subjected to radiation surveys immediately upon receipt. The packages are handled by Remote Receiving personnel prior to their being surveyed and delivered to the user. The commercial delivery vehicle is not surveyed before it departs. Not all Remote Receiving personnel who may handle the packages are required to wear film badges. Handling packages prior to their being surveyed is not in keeping with good ALARA practices. An undocumented GEND study indicates personnel at Bldg. 1400 will not receive more than 100 mrem/year exposure. GEND intends to install a Micro-R meter at Bldg. 1400 to monitor incoming packages.
- o An excess/waste flammable storage locker located in the waste storage area was still labeled "flammable." This item was corrected during the appraisal.
- o Vendor-owned high pressure nitrogen tanks located on the east side of Bldg. 200 and on the east side of the utility building are not labeled. Maintenance tests (e.g., hydrostatic tests) are not verifiable.
- o The sulfuric acid day tank located south of the cooling towers and the portable sulfuric acid tanks located near the deionized water tanks are not fitted with secondary containment.
- o Some incoming production items in temporary storage (e.g., in a freezer in the Mylar Stockroom, Area 110) awaiting QA inspection, are unlabeled (no diamond label). This item was corrected during the appraisal.
- o Several compressed gas cylinders in the gas cylinder storage area were not properly secured in their upright positions. Cylinders were stored in direct sunlight and therefore, not in compliance with EH&SP Manual, Standard 6.3, "Compressed Gas Cylinders."
- o Scrap compressed gas cylinders are stored near the compressed gas cylinder storage area, Bldg. 1000. These cylinders were not "tagged out." This item was corrected during the appraisal.

- o Many above ground tanks, such as liquified hydrogen, including leased and vendor owned tanks, are not labeled; i.e., they are not included in the NFPA labeling system, which GEND adopted, to indicate their contents (for emergency response purposes).

CONCERN:
(TS.6-4)
(H2/C1)

The handling, storage, and intrasite movements of hazardous materials, substances, and wastes (including hazardous, mixed, and radioactive) do not meet all of the health, safety and environmental protection requirements of DOE 5480.1A.

FINDINGS:

- o Emergency response personnel who would respond to an onsite transportation incident involving hazardous materials must be able to recognize DOT placards, labels, and shipping documents.
- o Security Inspectors, who most likely will be the first to discover and/or be the first on scene of a transportation incident involving hazardous material do not receive hazardous materials or DOT-related training, so as to be able to recognize and accurately report the incident, sufficient for their function.
- o Not all members of the Fire Brigade get DOT-related training sufficient for their function for emergency response to transportation incidents involving hazardous materials.
- o There has been no coordination between the Receiving and General Stock Branch and the Senior Specialist, Fire Protection, regarding the availability of information ("shipping papers" or telephone contact) of hazardous materials that may be in transit on the various delivery trucks (GE and others) that may be moving onsite.

CONCERN:
(TS.6-5)
(H2/C1)

Preparation for response to onsite transportation incidents involving hazardous materials does not meet all the safety requirements of DOE 5480.1A. (See Concerns EP.3-1 and TC.1-1.)

FINDINGS:

- o DOE 1540.1 requires DOE shipping papers contain a 24-hour telephone number of someone who can provide emergency response information regarding the hazards of the DOE cargo.
- o Implied in the DOE 1540.1 requirement is an organization, or system, to provide information to Incident Commanders who request technical advice or assistance regarding the DOE cargo which may be involved in a transportation incident.
- o For radioactive materials AL 1540.1, both CHEMTREC and contractor phone numbers are required; for other hazardous materials, the CHEMTREC phone number is required. (DOE is not a registered user of CHEMTREC.)

- o A review of selected DOE/GEND shipping papers revealed inconsistency regarding listing of the 24-hour number. It was on most of the shipping papers, but was missing from some.
- o Hazardous waste shipping papers listed the office and home telephone numbers of two employees in the waste management section. There was no procedure to guarantee that either of these employees could always be contacted in event of an emergency.
- o At approximately 9:45 p.m. on January 15, 1990, a S&H Subteam member called the GEND 24-hour telephone number (813-541-8129). The Security Inspector who answered the phone was not aware that the phone number was listed on DOE/GEND shipping papers. There was no procedure or list of names of persons who could be contacted regarding the hazards of the shipment.
- o Further, inquiry revealed no system or program plan to provide technical advice about the DOE cargo or assistance to an Incident Commander at the scene of a transportation incident.
- o Proposed Emergency Communications requirements of 49 CFR 172.600, are similar to those already imposed by DOE 1540.1. They become effective on June 4, 1990, and will be covered by DOE 5480.3.

CONCERN: Preparation for response to offsite transportation incidents involving DOE cargos does not meet the requirements of (TS.6-6) DOE 1540.1. It also does not meet the requirements of (H1/C1) DOE 5480.3 (49 CFR 172.600, which will be effective on June 4, CAT II 1990). (See Section EP.1 and Concern OA.2-2.)

- FINDINGS:**
- o GEND has not performed "job task analyses" to determine the specific qualifications or training needed by various workers.
 - o Although key GEND PT personnel receive annual DOT-related training, there is no GEND policy requirement for this training.
 - o In those cases where onsite training is being accomplished, not all require performance evaluation, i.e., an examination to determine if the trained employees know the material. There is no requirement that instructors receive additional technical training, or "instructor" training. There is no requirement that trainers receive recurrent training. Training is not supported by lesson plans, examinations, banks of examination questions, classroom attendance records, and worker examination records.

- o Personnel who prepare hazardous materials for offsite shipment are not covered by a documented training program meeting the full intent of DOE 5480.3 (July 9, 1985), which includes the training requirements of 49 CFR 100-199 and 10 CFR 71.
- o The training program for personnel who handle or may be involved with intrasite movements of hazardous materials does not meet the full intent of the safety, health, and environmental protection requirements of DOE 5480.1A.

CONCERN: See Concern TC.1-1.

- FINDINGS:**
- o The GEND Spill Prevention Control and Countermeasures (SPCC) plan does not establish definitive requirements for: spill prevention (e.g., procedures, and tankage standards), spill control (e.g., secondary containment, sumps), or spill countermeasures (e.g., cleanup protocol).
 - o The SPCC plan must, and does, address oil and petroleum products. A separate plan addresses hazardous wastes. Good business practice would suggest these plans be combined into a single plan and also include hazardous materials and hazardous substances.
 - o The secondary containment for acid and caustic supply tanks for the water neutralization facility is valved to "hold up" spilled material, or rain water, prior to release. The valve for this drain is not labeled.
 - o There is no secondary containment around the temporary drum storage area near the incoming inspection holding area (north of Bldg. 200). The drums were not labeled. This item was corrected during the appraisal.
 - o The plan is not approved by the General Manager, does not reflect organizational changes made in November 1989, and has never been exercised.
 - o There is no requirement that primary SPCC Coordinators receive special training.
 - o Hazardous materials spills in Chemical Storage, Bldg. 600, are directed to drains which lead to underground sumps. The sumps contain water which is either ground water and/or run-off from rain water.
 - o Although the Pinellas Self Assessment, Chapter 11, "Handling of Hazardous Commodities" (January 15, 1990) states, "Modify existing Bldg. 600 sump system to bring holding tanks aboveground," planned modifications to Bldg. 600 include the construction of new underground sumps.

- o The SPCC plan requires that the filling of gasoline and diesel bulk storage tanks be monitored by GEND employees trained to 49 CFR 177. Training of the employees assigned this function could not be verified.

CONCERN:
(TS.6-7)
(H3/C1)

The GEND spill prevention, control, and countermeasures program does not meet all the requirements of DOE 5480.4 and 40 CFR 112.

4.5.9. Security/Safety Interface

4.5.9.1. Overview

The appraisal of this area included evaluation of the safety of security improvements, emergency access and egress controls, planning for security emergencies, and safety of security activities. One finding was developed relative to the lack of a general safety assessment or analysis for the deployment of weapons, vehicles, and protective equipment by security personnel in the vicinity of hazardous materials and processes in the facility. This is a derivative requirement of DOE 5480.16 for firearms safety. The finding supports the overall concern on site safety assessment in the Organization and Administration section of this report.

Few security improvement construction projects have been conducted in recent years. Reviews of the associated engineering and design packages indicated the safety reviews had been completed. Safety and security conflicting concerns are resolved before actual construction. The DOE Project Management System (DOE 4700.1) is used to control the review, approval, and construction process; and the design bases of DOE 6430.1A are employed.

Security forces were observed to control the site adequately during the safety emergency exercise conducted during this appraisal. Security forces allow emergency vehicles to enter the site unhindered for such events. Security forces participate in site safety drills and their resulting critiques. Security drill scenarios are reviewed for approval by EH&SP.

Security control points allow unhindered personnel egress in the event of emergency evacuations. Doubly redundant emergency power is available to operate ingress/egress control systems in the event of the loss of offsite electric power. The role of security personnel in safety emergencies is specified in site emergency plans. Security forces receive the basic safety training received by all new employees and receive building specific OJT on their first-shift assignment after basic training. They also receive cardiopulmonary resuscitation, fire control, and elementary first aid training, since they are usually the first responder on the scene in an emergency event. Safety requirements of DOE 5480.16 have been incorporated into the operations of the firing range and an approved SAR is in place. All weapons' requalifications and their related safety aspects are up to date. Specific safety reviews are being incorporated in the security force lesson plans.

4.5.9.2 Findings and Concerns

SS.3 FACILITY PLANNING FOR SECURITY/SAFEGUARDS EMERGENCIES

PERFORMANCE OBJECTIVE: Safety authorities and responsibilities for all types of security/safeguards emergencies should be well defined and understood by all involved parties.

- FINDINGS:**
- o DOE 5480.16 requires that analyses be performed for the safety of operation and/or transport of weapons, protective force equipment, and vehicles in the vicinity of hazardous materials and processes.
 - o Such analyses have not been performed on a general basis for the facility and such analyses are not planned.

CONCERN: See Concern OA.7-1.

4.5.10 Site/Facility Safety Review

4.5.10.1 Overview

The scope of the appraisal in this area was focused on the independent safety review function and its organization, operation, and impact on safety of operations. The purpose of the safety review function, as defined in DOE 5482.1B., Section 9.d., is to provide assurance to contractor and DOE management that all aspects of safety are adequately considered and independently reviewed.

The facility safety review function at GEND has not fulfilled the requirements of the DOE Order or the criteria of the TSA Performance Objectives. This internal safety review or appraisal function had been assigned to a Department Safety Committee, which was to advise the General Manager on safety issues.

A review was made of the very limited Committee organizational description (GOP A.3.03, "Employee and Plant Safety") and of Committee minutes; discussions were held with the past Committee chairperson and past Committee members. It was found that the Committee had not functioned for the last 3 years and only fitfully for the 3 years prior to that. At that time the Committee had met its own requirements of meeting at least twice per year. Its auditable performance indicated that it was not meeting the intent of the DOE Order either independently, practically, or effectively. This was also a major finding of a January 1989 AL appraisal and the GEND Technical Safety Assurance Team study.

GEND has developed plans to reorganize and revitalize the internal safety appraisal function and has assigned the responsibility to a new Department ES&H Review Committee. This Committee's structure is described in a very recent revision of GOP A.3.03. Committee members have not been appointed and the Committee charter has not been developed. The charter must be developed adequately to specify proper Committee makeup of technical disciplines, to ensure that thorough, documented reviews are conducted, and to also ensure proactive independence of the reviews. These deficiencies are inherent in the description of the new Department ES&H Review Committee in the revised GOP.

A related concern was identified for the lack of triennial management appraisals of the internal safety appraisal system. No management appraisals for the period of Committee operation were found. The revised GOP A.3.03 commits GEND to the performance of triennial management appraisals, with the first one to be performed in 2 to 3 years to evaluate the effectiveness of the safety appraisal system.

An additional concern was raised by the lack of an effective, proceduralized follow-up system for safety concerns and improvements based on operating experience, and for UOR and appraisal recommendations. Such follow-up is accomplished eventually, but is neither necessarily timely nor based on proper priorities.

4.5.10.2 Findings and Concerns

FR.1 SAFETY REVIEW COMMITTEE

PERFORMANCE OBJECTIVE: A Safety Review Committee should be available to review safety questions and the safety impacts of experiments. This Committee is part of the "Contractor Independent Review and Appraisal System" specified in DOE 5480.5, or DOE 5480.6, and/or DOE 5482.1B., Section 9.d.

- FINDINGS:**
- o The independent safety review or internal appraisal function was provided by the Department Safety Committee (DSC). The structure of this Committee was designated by GOP A.3.03, "Employee and Plant Safety" (May 15, 1984); the Committee had been operating prior to 1984. The Committee was formed to advise the General Manager on the "total safety effort." Communications of recommendations to management were not evident.
 - o The Committee has not met in the last 3 years and currently has no documented, appointed members. The specified makeup of the Committee did not ensure that the DOE-specified multidisciplinary mix of technical disciplines for in-depth reviews was obtained.
 - o The non-functioning of the DSC as described in GOP A.3.03 was a finding of an AL industrial safety appraisal of January 1989 and a repeat finding from an AL safety management appraisal of April 1982. The latter finding had been closed in June 1986.
 - o The reorganization and revitalization of the safety review function has been identified by the contractor in its long range improvement plan (Pinellas Plant ES&H Self Assessment and Long Range Improvement Plan, Draft, January 15, 1990) as being necessary to assure that EH&S programs meet or exceed the safety expectations of the public and DOE. A revision of GOP A.3.03 was issued (January 12, 1990) to establish the safety review function in a "Department ES&H Review Committee" to manage the department's EH&S issues. Current schedules call for convening and chartering this Committee in March 1990.
 - o The reorganized Committee's assigned functions as described in GOP A.3.03 do not strictly specify the independence of the Committee, the needed proactive nature of the Committee, or the appraisal function of the Committee to develop recommendations to Management.
 - o GOP A.3.03 references DOE 5480.5 as the basis for managing safety issues. Since GEND is considered a non-nuclear facility, DOE 5482.1B is the proper order for the implementation of the internal safety appraisal function.

CONCERN: The internal safety appraisal function provided by the GEND
(FR.1-1) Department Safety Committee has not been proactive or
(H2/C1) independent of line responsibility, is not functioning, and is not
in compliance with DOE 5482.1B, Section 9.d.

FR.2 SAFETY REVIEW TOPICS

PERFORMANCE OBJECTIVE: Items that require review by the Safety Review Committee should be well defined and understood by facility management.

- FINDINGS:**
- o DOE 5482.1B, Section 9.d., specifies that the internal appraisal system review the overall operations of each facility with sufficient frequency to assure adequate EH&S coverage, and also specifies that an independent review of the EH&S functions be conducted to determine that ES&HP is accomplishing reviews of order-specified topics.
 - o None of these specified internal appraisals were conducted in the last 3 years due to the non-functioning of the Department Safety Committee. Prior to that, Committee minutes indicated that the types of reviews specified were not conducted by the Committee.
 - o The current version of GOP A.3.03, "Employee and Plant Environmental Health and Safety" (January 12, 1990), describes the scope of the reorganized Safety Committee involvement in a list of topics. These are generally in agreement with the TSA criteria and the DOE Order, but do not explicitly include reviews of changes to, or violations of, Operational Safety Requirements (OSRs).

CONCERN: See Concern FR.1-1.

FR.3 OPERATION OF SAFETY REVIEW COMMITTEE

PERFORMANCE OBJECTIVE: Review of site/facility activities by the Safety Review Committee should ensure achievement of a high degree of safety.

- FINDINGS:**
- o DOE 5482.1B, Section 9.d., specifies that internal appraisals be conducted at the operating level by persons independent of the activities being appraised, and that the quality of the review be evident from the documentation.
 - o It was apparent from past Department Safety Committee records that independence from activities was not achieved and that the Committee or its members were involved in the hands-on fix of identified safety problems.
 - o The Committee has not conformed to its own specified meeting frequency by not meeting at least semi-annually.

CONCERN: See Concern FR.1-1.

FR.5 TRIENNIAL APPRAISAL OF SITE/FACILITY SAFETY REVIEW SYSTEM

PERFORMANCE OBJECTIVE: A triennial appraisal of the safety review system should be performed by contractor management.

- FINDINGS:**
- o DOE 5482.1B, Section 9.d., specifies that the internal safety appraisal system shall be reviewed by management for adequacy of performance at least every 3 years.
 - o There have been no triennial management reviews of the internal safety appraisal system either during the time that the Department Safety Committee was active or during their inactive period of the last 3 years.
 - o The revision of GOP A.3.03, "Employee and Plant Environmental Health and Safety" (January 12, 1990), specifies that "a triennial appraisal of the EH&S review system is conducted by management to review records, documentation and procedures." This specification incorrectly references DOE 5480.5. The GOP specification does not adequately define the means to conduct the triennial appraisal.

CONCERN: Triennial appraisals of the GEND safety review system are not being conducted, as required, to comply with DOE 5482.1B, (FR.5-1) Section 9.d.
(H2/C1)

FR.6 OPERATING EXPERIENCE REVIEW

PERFORMANCE OBJECTIVE: Operating experiences should be evaluated, and appropriate actions should be undertaken to improve safety and reliability.

- FINDINGS:**
- o There is no proceduralized, follow-up system to apply trending analysis, audit and appraisal recommendations, and other processes for achieving safety improvements.
 - o There is no formalized in-house event reporting system or trending of in-house events.
 - o UORs show an uneven development as to findings and recommendations, and their follow-up is not formalized or tracked. UORs presented root causes, and their relationships to previous UORs were examined.
 - o UOR summaries from other facilities are not received and, thus, not available for guiding performance improvement.
 - o Timing of responses to audits, appraisals, and UOR recommendations are prioritized by resource constraints and imposed schedules, and not by importance.

CONCERN: See Concern OA.2-2.

4.5.11 Radiological Protection

4.5.11.1 Overview

This Appraisal addressed all 12 Radiological Protection Performance Objectives. This Appraisal was accomplished by observation of work activities in progress, discussions with personnel throughout the GEND organization, review of results of special tests requested, and review of documentation. This Appraisal encompassed all aspects of radiological protection as it related to the various facilities at GEND and also the unique spectrum of radiological conditions present.

The overall assessment is that all levels of the GEND organization are receiving adequate radiological protection. This is primarily due to a GEND staff that appears willing to accept line responsibility for radiological safety along with a technically strong health physics staff providing direction.

The radiological protection organization is clearly defined and appropriate resources have been allocated to accomplish the currently assigned tasks. The Environmental Chemistry Laboratory, although not a part of the radiological protection organization but providing direct support to Health Physics daily operations, is not meeting program requirements.

Program effectiveness is being evaluated; however, internal assessments are limited in scope and superficial in content. Health Physics investigates and documents radiological safety incidents and generates UORs as required. In 1989 there were three UORs having radiological safety implications. Results of assessments are not being trended.

GEND has developed policies and procedures that are generally understandable and workable by all personnel. These documents support the policy that the responsibility for radiological safety rests with line management. However, inconsistencies within the procedures and a lack of formal document control make compliance with the procedures difficult. Radiological postings throughout the facility are generally good; however, instances of non-compliance with regulations were observed. The radiation safety controls associated with the accelerator and X-ray machines are lacking in formality and are not in compliance with generally accepted standards. Compliance with procedural requirements for work on contaminated systems and compliance with "hold points" on safety work permits is less than acceptable.

External exposure, both individual and integrated plant personnel, at GEND is generally kept very low. GEND has taken adequate measures to continue the reduction of personal external exposure. Accreditation of the dosimetry system needs to be completed along with the formalization of employee exposure investigations. Radiation workers were observed not to wear their personnel dosimeters consistently, or failed to ensure they were properly located on their body.

Occupational internal exposures are low compared to other DOE sites. This accomplishment results from a conservative approach to working with tritium and through the extensive use of engineering controls. However, compliance with the rules on providing bioassay samples at specified frequencies has not been satisfactory.

Generally an adequate supply of properly maintained and calibrated portable instrumentation is provided. A lack of management controls permitted survey meters, which had failed calibration, to be returned to the field for use; moreover, the traceability of calibration sources to NIST was not available. Procedures for the operation and use of portable instruments need to be developed.

GEND has recognized the inadequacies and problems associated with outdated Constant Air Monitors (CAMs) in Bldg. 400. New state-of-the-art CAMs have been purchased and are in the process of final installation. Calibration and use procedures for these instruments need to be developed and implemented.

Contamination controls are generally good. Contamination levels within the work areas are kept low and generally confined to the source. Indications were found that proper contamination control techniques are not always being followed, in some areas causing contamination spread to the general areas of the facility.

GEND's strength lies in its commitment to an ALARA philosophy that prevails across all departments. Commitments to ALARA are demonstrated by installation of the new Tritium Recovery System (TRS) and the conservative approach to performing work. This commitment at present is best demonstrated by management; however, it has not been totally internalized into the GEND culture. ALARA goals and objectives need to be further developed, trended and communicated.

4.5.11.2 Findings and Concerns

RP.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Facility/Site organization and administration should ensure effective implementation and control of radiological protection activities on the facility/site.

- FINDINGS:**
- o The GEND Environmental Chemistry Laboratory (ECL) has not maintained the daily instrument source response check control charts for the Beckman tritium counters since August 1989.
 - o The ECL has not developed procedures for counting aliquots of media other than water or urine, e.g. vaporblast and fluorinert.
 - o There is no documentation of the efficiency of the water or urine aliquot preparation procedure.
 - o The workload of the ECL has increased in the last year, without an increase in staff.

CONCERN: The Environmental Chemistry Laboratory is not meeting existing or projected program requirements.
(RP.1-1)
(H2/C2)

RP.2 INTERNAL AUDITS AND INVESTIGATIONS

PERFORMANCE OBJECTIVE: The internal audit program for both routine operations and unusual radiological occurrences should provide adequate performance assessments.

- FINDINGS:**
- o The Health Physics internal appraisals program is not in accordance with DOE 5482.1B, Section 9.d., and DOE 5480.11. Deficiencies include the following:
 - The GEND EH&SP Audit Record is a checklist that does not address the areas of interest described in DOE 5480.11.
 - The checklist provides a prescriptive approach to issues which cannot be assessed in this manner.
 - Trend analysis of findings is not performed.
 - o Lack of oversight has contributed to program deficiencies. (See Concern RP.8-1.)

CONCERN: See Concerns OA.2-2 and FR.1-1.

RP.3 RADIOLOGICAL PROTECTION PROCEDURES AND POSTING

PERFORMANCE OBJECTIVE: Radiation protection procedures for the control and use of radioactive materials and radiation generating devices should provide for safe operations and for clearly identified areas of potential consequences.

- FINDINGS:**
- o The controlled copies of the EH&SP Manual contained the incorrect revisions of standards and GOP, including Standards 5.2 and 5.3, and GOP.1.10.
 - o Inconsistencies in procedural direction exists between EH&SP Manual Standards and Operating Procedures. (See Concern RP.10-1.)

CONCERN: See Concern OA.7-2.

- FINDINGS:**
- o Radiological posting violations were found during this Appraisal, including the following:
 - Posting on doors to Bldg.1000, designating this building as a Radioactive Waste Storage Area, is black lettering on a white background, without the required radiation symbol. This is contrary to the specified color and symbol requirements stated in DOE 5480.11.
 - Of the 12 controlled area access points to the facility, five were found without the required "Controlled Area" posting as required by DOE 5480.11 and GEND procedures.
 - The Health Physics tanks were not posted as "Potential Contaminated Area."
 - A storage cabinet in Area 158B, containing trays found with loose contamination, was only posted as "Caution Radioactive Material."

CONCERN: Radiological postings are not being accomplished in accordance with DOE 5480.11 and GEND procedures.
(RP.3-1)
(H2/C1)

- FINDINGS:**
- o The radiation warning light, at the accelerator facility, is incorrectly wired, such that radiation could be produced even if the warning light had burned out. This is not in accordance with the requirements of National Council on Radiation Protection and Measurements (NCRP) Report No. 51.

- o There is no documented surveillance program to test the safety interlocks at the accelerator.

Note: GEND notified the Tiger Team that they were suspending operation of the accelerator until resolution of findings.

- o The operators and custodians of the X-ray units have not been trained to understand the meaning and purpose of the recently instituted "red inspection record card."
- o The list of authorized X-ray machine operators, attached to the side of the machines, is not signed and dated by the machine custodian.
- o X-ray machine operators and custodians were not aware of the limitations that were placed on machine operations by the results of the semi-annual X-ray survey because they are not being provided a copy of the survey record.
- o The keys to the X-ray machine were not under the control of the custodian.

CONCERN: The Radiation Protection Program for the operation and use of X-ray machines and the accelerator lacks formality and does not comply with generally accepted standards.
(RP.3-2)
(H2/C1)

- FINDINGS:**
- o Violation of radiological work procedures were identified, including the following:
 - Environmental Health and Safety Programs Work Permit (SWP) #3246 was issued for work on January 22, 1990. The Appraisal Team observed on January 23, 1990 that the workers had proceeded beyond a "hold point" in the procedure, thereby exposing contaminated interior surfaces to the environment prior to completion of contamination surveys by health physics. Contamination surveys subsequently determined the interior surfaces to be contaminated above GEND limits.
 - UOR - NDD 89-12 documented a situation where workers removed contaminated equipment without the required approved radiological work procedure and SWP.

CONCERN: Radiological work procedures are not being complied with.
(RP.3-3)
(H2/C2)

RP.5 EXTERNAL RADIATION DOSIMETRY

PERFORMANCE OBJECTIVE: The routine and accident personnel radiation dosimetry programs should ensure that personnel radiation exposures are accurately determined and recorded.

- FINDINGS:**
- o GEND's dosimetry program is not accredited as required by DOE 5480.11:
 - GEND's dosimetry was not accredited by January 1, 1990, as specified by DOE 5480.11.
 - GEND has determined that a change in dosimeters from the R.S. Landauer G-1 film dosimeter to the R.S. Landauer Z-1, 3-chip-TLD-700 thermoluminescent dosimeter (TLD) was required to obtain accreditation,
 - GEND has submitted a Remedial Action Plan to Pinellas Area Office as required by DOE 5480.15.
 - GEND is prepared to support performance testing by April 1990, if required.
 - o There is no formal documentation of investigations into personnel exposure anomalies:
 - Investigations of personnel exposure anomalies are completed by the Health Physicist who assigns the final dose.
 - Individuals do not see or acknowledge the assignment of this exposure to their personal exposure record and individual supervisors are not required to acknowledge the facts surrounding the assignment of radiation exposure to their personnel.
 - o Radiation workers do not consistently wear their personnel dosimeters as required or ensure proper placement on their body. Examples of noncompliance observed include the following:
 - Radiological protection requirements state that radiation workers are to wear their personnel dosimeters at all times. Personnel assigned dosimetry in at least three locations were not wearing their dosimeters. Personnel indicated that they wear their dosimeters only when performing work involving the exposure to radiation.
 - An individual working with a neutron-producing device improperly positioned the personnel neutron dosimeter.

The radiation dose was to the front upper portion of the body; however, the worker had clipped the neutron dosimeter to his pants pocket.

CONCERN: The personnel dosimetry program at GEND does not ensure
(RP.5-1) personnel radiation exposures are accurately determined
(H2/C1) and recorded.

RP.7 INTERNAL RADIATION DOSIMETRY

PERFORMANCE OBJECTIVE: The internal radiation dosimetry program should ensure that personnel radiation exposures are accurately determined and recorded.

- FINDINGS:**
- o Procedural requirements have not been established for an employee's termination bioassay, nor a system developed to identify and address those individuals who fail to provide a bioassay sample.
 - o GEND estimated that 20 percent of the personnel that terminated in 1988 did not provide a termination bioassay.
 - o The Termination Checklist (FC-635) does not contain a check-off block for a termination bioassay.
 - o The requirements for a termination bioassay are not stated in GEND procedures.
 - o Individual workers, their supervisors, and management are not ensuring that required bioassay samples are provided. In 1989, bioassay samples were not submitted in accordance with GEND procedures. Seventy percent of the required monthly samples and 35 percent of the required weekly samples were not submitted.

CONCERN: The internal radiation dosimetry program at GEND does not ensure that personnel radiation exposures are accurately determined and recorded.
(RP.7-1)
(H2/C2)

RP.8 FIXED AND PORTABLE INSTRUMENTATION

PERFORMANCE OBJECTIVE: Personnel dosimetry and radiological protection instrumentation used to obtain measurements of radioactivity should be calibrated, used, and maintained so that results are accurately determined.

FINDINGS: o Numerous deficiencies associated with instrumentation calibration and use were noted during the appraisal. These include the following:

- Calibrations of instrumentation, such as multipoint calibration of each scale, were not consistent with the requirements of ANSI N323.
- Five of twelve PAC 4S portable alpha survey meters had failed their calibration by exceeding the 10 percent tolerance (by 8 percent) stated in the Calibration and Verification Procedure. This condition was found to have existed for almost a year.
- The out-of-tolerance condition was not recognized by the technician, and the instruments were returned to service as calibrated instruments.

Note: GEND, upon notification of the finding, removed the uncalibrated instruments from service.

- Documentation to demonstrate the traceability of the Shepard Calibrator - Model 81-12 Beam Irradiator to the National Institute of Standards and Technology (NIST) was not available.
- During the AL Health Physics Appraisal of the Pinellas Plant, June 27-July 1, 1988, lack of traceability of sources to NIST was a finding (88-12). GEND's corrective action included "... existing sources used in the calibration of Health Physics detection equipment are being reviewed to insure traceability is known...." This finding was subsequently closed during the 1989 AL Appraisal of Pinellas Plant.
- Source check tolerances for portable instruments have not been specified and procedures for the use of portable instrumentation have not been completed. GEND has recognized these deficiencies and has a plan for development of these procedures.
- The work area constant air monitors (CAMS) in the Bldg. 400 have been replaced with state-of-the-art equipment. The new CAMS were calibrated by the manufacturer, but GEND has not developed the recalibration and operating procedures. GEND is in the process of determining the optimum location for

the CAMS and the resolution of equipment problems associated with these instruments.

CONCERN: Fixed and portable radiological protection instrumentation
(RP.8-1) is not being properly calibrated, used, and maintained so
(H2/C2) that measurements of radioactivity are accurately
determined. (See Concern QV.4-1.)

RP.10 RADIATION MONITORING/CONTAMINATION CONTROL

PERFORMANCE OBJECTIVE: The radiation monitoring and contamination control program should ensure worker protection from radiation exposures.

- FINDINGS:**
- o Proper contamination control techniques are not being followed by personnel when working in and exiting from Contaminated Areas. Examples include the following:
 - At the request of the S&H Subteam, smears for tritium activity were taken on selected surfaces in general areas of the plant. General areas of the plant include those areas in which no contamination controls are exercised. Loose contamination levels greater than the plant contamination limits were found at the step-off areas of Area 182, and the adjacent general area hallway. Also, a set of welding goggles located on a desk in the step-off area in Area 182 was found to be contaminated to greater than 90 percent of the plant contamination limit.
 - Routine housekeeping, such as scheduled periodic mop downs of step-off areas, is not being done.
 - o Conflicting and inadequate procedures are causing confusion and a lack of compliance with procedural requirements: (See Concerns OA.7-2 and OA.7-3.)
 - On January 16, 1990, the S&H Subteam observed a manual hydraulic fork-lift in the Contaminated Area of Area 108 with a completed Radioactive Release Request Tag (FC-35) dated December 4, 1989. EH&SP Standard 5.2 states that the tag (FC-35) is valid for 5 days after the signature of Health Physics. Radiation Release Request Tag (FC-35) does not have a clear method to specify if material is released conditionally or unconditionally from further radiological controls. Inconsistencies pertaining to final disposition of tag FC-35 exist between EH&SP Standard 5.2 and instructions given on the tag.
 - In Area 108, two portable breathing system air line respirator face pieces were observed wrapped in a yellow polyethylene bag with radiation symbol, even though the S&H Subteam was assured the face pieces had been surveyed and were released unconditionally. At GEND, these types of bags are used to designate contaminated material or materials simply transferred between contaminated areas. There is no uniform understanding of the significance of materials marked by the radiation symbol or yellow color.

- o It is the contractor's position that the concern is not supported by the facts as presented. The contractor agrees that contamination found was greater than GEND's procedural limits. However, the contractor does not agree that the workers are inadequately protected given the extremely low contamination levels observed. It is the contractor's position that: 1) calculations will show that radiation exposures from these contamination levels are not measurable, as supported by bioassay sampling; and 2) contamination levels which could cause measurable exposures are well controlled at the source. This is supported by routine work and contamination area surveys, which show that routine contamination levels within these zones are not significantly above uncontrolled area limits.

CONCERN: The contamination control program does not ensure that
(RP.10-1) workers are protected from unnecessary radiation exposure.
(H2/C2)

RP.11 ALARA PROGRAM

PERFORMANCE OBJECTIVE: A formally structured, auditable program should be in place with established milestones to ensure that exposures are maintained as low as reasonably achievable (ALARA).

- FINDINGS:**
- o GEND has established very limited ALARA goals and objectives. The 1989 internal (HTO) exposure goals were partially met. No single worker exceeded the goal of less than 100 mrem; however, the plantwide total goal of less than 500 mrem was exceeded by 10 percent.
 - o Trends or progress towards the goals are not communicated to other organizations within GEND throughout the year.

CONCERN: See Concern OA.3-1.

4.5.12 Industrial Hygiene

4.5.12.1 Overview

The Industrial Hygiene Appraisal addressed all Performance Objectives in this category. The Appraisal included review of GEND Policies and Procedures, program documentation, consultant and internal reports, and PAO and AL Appraisals. Interviews with EH&SP personnel, Medical Director, PAO and AL Health Protection staff, line management, and craft/floor unit members; plant orientation tours; audits of records; observation of an emergency drill; and specific work site visits on first (day) and second (evening) shift operations were used to identify and/or validate GEND performance in various program areas. Six concerns were identified during the appraisal that warrant corrective action to enhance specific elements of the Industrial Hygiene Program. There is considerable overlap in Industrial Hygiene (IH) and Occupational Safety (OS) Programs; to avoid redundancy in assessment and reporting, the IH and OS sections of this appraisal should be considered an overall assessment of the nonradiological personnel protection programs at the Pinellas Plant. Findings and/or concerns noted in either the OS or IH program are applicable to the Personnel Protection Program in total. The appraisal of the Industrial Hygiene Program also provided support to concerns noted in the OA and TC sections of this report.

The most recent (1989) appraisal by AL had rated the Industrial Hygiene Program as "meeting or exceeding the established DOE guides and recommended good practices"; this rating could not be supported during this appraisal. The Industrial Hygiene Program is not in full compliance with DOE 5480.10 and DOE Prescribed Standards as identified in DOE 5480.4. There is no indication that acute or chronic disease has resulted or may result from potential exposures to chemical agents or that corrective actions have not been effective; however, GEND monitoring records, although limited, clearly confirm that chemical exposures to Plant personnel have exceeded DOE prescribed (OSHA) limits during routine work assignments. Physical stresses, such as may be induced by repetitive motion tasks, have resulted in lost time injuries. Trauma related injuries and excessive chemical exposures clearly indicate deficiencies in the Industrial Hygiene Program.

A recent GEND self assessment document identified what is judged to be the major "root cause" of the current deficiencies in the Industrial Hygiene Program. The following is quoted from the subject document.

"In the mid-1980s, the program was staffed with three professional hygienists and was supported by a full time Health and Safety Records (HSR) system administrator. By the first quarter of FY 89, the staff had been reduced to one hygienist with approximately two years of experience. The program was supported with this single resource for a period of about one year. The level of support available was adequate to maintain chemical material control programs, institute SARA Title III compliance efforts, support the transfer of chemical vapor deposition technology to RTG production, and address day-to-day IH issues and concerns. Although the resident hygienist performed exceptionally, the overall program deteriorated."

The available Industrial Hygiene Program resources have indeed performed in an exceptional manner. Typical of the achievements is the implementation of the methylene dianiline (MDA) Material Control Program. This has required extensive resource coordination from Industrial Hygiene, Medical, Manufacturing, Engineering, senior management, and craft/floor level plant personnel. In addition, resources external to GEND were effectively identified, utilized, and supported. GEND is clearly in a leadership role in MDA control within the industry. Another example of exceptional performance includes the effective and efficient implementation of the Chemical Labeling Program throughout the facility. This procedure was considered a noteworthy Practice by the S&H Subteam. However, significant deficiencies in other areas of the Hazard Communication Program unfortunately detract from such achievement.

In summary, the GEND Industrial Hygiene Program is staffed by technically qualified personnel and has been effective in implementing programs within the limitation of available resources; moreover, there is no evidence of acute or chronic disease in the plant population due to chemical exposures. However, the Industrial Hygiene Program is not judged to be capable of ensuring that employees are consistently provided a safe and healthful work place free of recognized hazards.

4.5.12.2 Findings and Concerns

IH.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Site and facility organization and administration should ensure effective implementation and control of the industrial hygiene program.

- FINDINGS:**
- o GEND has not developed and/or fully implemented several Industrial Hygiene programs required by DOE Orders or industry practices. Examples of program deficiencies include, but are not limited to, insufficient chemical exposure surveillance; incomplete implementation of the hazard communication program; no formally developed carcinogen control program; and noted deficiencies in surveillance of the effectiveness of engineering controls (ventilation systems). These items are noted as concerns in other sections of this report.
 - o The professional staff resources are frequently utilized to perform administrative, clerical, and subprofessional tasks such as data entry, word processing, "routine" air sampling, and data base administration.
 - o Industrial Hygiene staff assigned duties include programmatic accountability in areas additional to those specified in DOE 5480.10, "Contractor Industrial Hygiene Program." An example includes SARA Title III compliance reporting, as required by DOE 5400.1. In terms of human and program resources, this is a technically-related task; however, it is also a significant additional duty requiring professional resources.
 - o In the mid-1980s, the program was staffed with three professional hygienists and was supported by a full-time Health and Safety Records (HSR) system administrator. By the first quarter of FY 89, the staff had been reduced to one hygienist, with approximately 2 years of experience. The program was supported with this single resource for a period of about 1 year. The level of support available was adequate to address only day-to-day IH issues and concerns. Although the resident hygienist performed exceptionally, the overall program deteriorated.
 - o Recent additions of an Advanced Industrial Hygienist and an Industrial Hygiene Technician have provided additional human resources; however, expanding program demands have consumed the available resources and only limited progress has been achieved in addressing existing programmatic deficiencies.
 - o Deficiencies in the availability of technically qualified human resources have been previously identified in GEND self assessments and AL appraisals.

CONCERN: Sufficient resources are not available to develop, implement, and
(IH.1-1) support Industrial Hygiene Programs requirements at GEND.
(H2/C1)

IH.2 PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Procedures and documentation should provide appropriate direction, record generation, and support for the industrial hygiene program.

FINDING: o GEND has not established and maintained clear, consistent, and up-to-date standards and directives to assure effective implementation of the Industrial Hygiene program.

CONCERN: See Concern OA.7-2.

FINDINGS: o GEND has not conducted internal program audits (other than facility, area, and equipment inspections) in areas such as ventilation systems and training.

o The EH&SP staff has both line accountability and oversight review of programs in the industrial hygiene area.

CONCERN: See Concerns OA.2-1 and OA.2-2.

IH.3 MANAGEMENT OF HEALTH CONCERNS

PERFORMANCE OBJECTIVE: Chemical, biological, physical, and/or other environmental stresses arising in the work place should be identified, evaluated, and controlled.

- FINDINGS:**
- o Manufacturing, data and word processing, and assembly work consistently present potential ergonomic type stresses in the work place. There are reportedly over 800 personal computer systems in use at GEND; at least one employee has incurred a lost time injury due to carpal tunnel syndrome, reportedly related to keyboard work (repetitive motion); and at least three other repetitive motion injuries have recently been reported. However, GEND has not developed a program in ergonomics to support minimization and correction of such work place hazards.
 - o Known or suspect human carcinogens in use, or present at GEND, include (but are not limited to) asbestos, trichloroethylene, methylene chloride, methylene dianiline, benzene, chromium (VI) compounds, and toluene diisocyanate. GEND issued a policy regarding chemical carcinogens, GOP G.1.08, in 1984; however, GEND has not implemented the carcinogen control program to consistently identify, evaluate, and control potential exposures to such materials in the work place.
 - o GEND has not developed, implemented, and/or effectively documented hazard-related training programs as required by DOE prescribed standards. Examples include, but are not limited to, the following:
 - Confined space entry as required by 29 CFR 1910.146 as issued in June 1989,
 - Refresher training for chemical spill response (HAZMAT) personnel as required by 29 CFR 1910.120, and
 - Hazard communication training, which could not be confirmed for all employees handling, or working in areas with, potentially hazardous materials, as required by 29 CFR 1910.1200.

CONCERN: GEND has not effectively developed and implemented Industrial Hygiene Programs required by prescribed standards and/or recognized potential hazards.
(IH.3-1)
(H2/C1)

IH.4 SURVEILLANCE OF HEALTH CONCERNS

PERFORMANCE OBJECTIVE: Appropriate surveillance of activities should be conducted to measure industrial hygiene performance and ensure the continued effectiveness of controls.

- FINDINGS:**
- o A recent consultant survey (August 1989) provided evidence of chemical exposures to personnel in excess of the DOE prescribed (OSHA) limits. Specific examples include methylene chloride in mold cleaning and resin casting operations, acetone while cleaning resin dispensing equipment, and trichloroethylene in wire stripping operations. There is no indication that acute or chronic disease has or may result from potential exposures incurred in the past or that corrective actions have not been effective; however, supplemental documentation of effective chemical control has not been obtained.
 - o Measurement of airborne lead concentrations is not conducted quarterly at the firing range as required by DOE 5480.16. Bioassay (blood tests) for lead were conducted in November 1989 for most Security Patrol personnel; however, it could not be confirmed that firing range instructors have regularly received semiannual bioassays for lead as required by DOE 5480.16.
 - o Measurement of potential exposures to airborne asbestos fibers is not conducted at least every 6 months for maintenance personnel who handle asbestos containing materials. The exposures may reasonably be foreseen to exceed the acceptable OSHA action level.
 - o The lack of an adequate industrial hygiene surveillance program has been identified by GEND; however, development and implementation of a chemical and physical agent monitoring program is not scheduled until the third quarter, CY 91. This delay is unacceptable based on the potential for excessive exposures, as documented by GEND.
 - o DOE 5480.10 requires implementation of a work place monitoring program for potential hazard identification, assessment, and surveillance of the adequacy of controls.

CONCERN: A periodic monitoring program, as required by DOE 5480.10, (IH.4-1) has not been implemented to assure the effectiveness of (H2/C1) controls for nonradiological chemical and/or physical stresses.

- FINDINGS:**
- o DOE 5480.10 requires that industrial hygiene hazard inventories, reports, and monitoring data be easily retrievable. Related records, such as training documentation, should also be readily retrievable.
 - o Industrial Hygiene data are not systematically organized or analyzed to permit identification of trends or estimates of

credible exposures to many chemical, physical, and/or biological stresses of significance in the work place.

- o GEND has available an excellent industrial hygiene record management system, the GE Corporate Health and Safety Record System (HRS); but data are not routinely entered into the data base.

CONCERN: Industrial Hygiene data are not readily retrievable, (IH.4-2) analyzed for trends, or routinely utilized to support (H2/C1) hazard surveillance programs.

IH.5 COMPLIANCE WITH OCCUPATIONAL HEALTH STANDARDS

PERFORMANCE OBJECTIVE: Site/facility operations should comply with DOE-prescribed standards for the evaluation and control of occupational health standards.

FINDINGS: o Industrial Hygiene-related conditions that were not in compliance with applicable codes, standards, and regulations ranged from minor violations to serious noncompliance. Examples include, but are not limited to, the following:

<u>ITEM</u>	<u>STANDARD</u>
- Chemical spill response (HAZMAT) personnel had not received required refresher training.	29CFR1910.120(1)(2)
- Airline respirator facepiece, reportedly decontaminated and available for use, was stored in a bag marked radioactive waste.	29CFR1910.134(b)(6)
- Routine air monitoring data were not available for areas where respirators were worn.	29CFR1910.134(b)(8)
- Potential exposure to trichloroethylene was in excess of permissible exposure limit.	29CFR1910.1000(b)(1)

CONCERN: (IH.5-1)
(H2/C1) GEND is not in compliance with DOE-prescribed occupational health standards.

IH.6 PERSONNEL COMMUNICATION PROGRAM

PERFORMANCE OBJECTIVE: Site/facility personnel should be adequately informed of chemical and biological stress that may be encountered in their work environment.

- FINDINGS:**
- o Material Safety Data Sheets (MSDS), for essentially all purchased chemicals, are available at GEND through the Industrial Hygiene Department; however, they frequently are not readily available to workers in their work area. An example, includes chemical stores (Bldg. 600--a facility physically separated from the main building), where handling, sorting, dispensing, and transporting chemicals is a routine activity.
 - o Training records are not adequately documented, or retrievable, to demonstrate that employees have received training as required by DOE Orders and 29 CFR 1910.1200. (See Concern TC.1-1.)
 - o There is not a formalized program to communicate the potential health hazards and applicable operating limits to personnel in various work areas/facilities.
 - o DOE 5480.10 specifically directs DOE contractors to fully implement a formal Health Hazard Communication Program.

CONCERN: GEND has not effectively implemented a Health Hazard
(IH.6-1) Communication Program as required by DOE 5480.10
(H2/C1) and 29 CFR 1910.1200.

4.5.13 Occupational Safety

4.5.13.1 Overview

The Occupational Safety Appraisal addressed all Performance Objectives in this category. The Appraisal included review of Pinellas Plant equipment, processes, and facilities; observation of GEND and GEND sub-contractor work activities, and review of GEND, DOE/PAO and DOE/AL documentation and procedures. Interviews were conducted with GEND line management, EH&SP personnel, PAO and AL staff, and GEND employees. This Appraisal addressed all Performance Objectives in the Occupational Safety category. There is considerable overlap in Industrial Hygiene (IH) and Occupational Safety (OS) Programs; to avoid redundancy in assessment and reporting, the IH and OS sections of this Appraisal should be considered an overall assessment of the Nonradiological Personnel Protection Program. Findings and/or concerns noted in either the OS or IH program are applicable to the Personnel Protection Program in total.

The Occupational Safety program at the Pinellas Plant is documented in a hierarchy of policies and procedures including the GE Corporate Safety Policy Statement, the Environmental Health and Safety Manual, General Operating Procedures, and Manufacturing and Operating Instructions. The GEND policies and procedures are generally consistent with DOE Orders; however, problems in GEND safety procedures were noted, including inconsistencies between procedures and omission of applicable standards. GEND is actively correcting these problems.

GEND Policy places prime responsibility for implementation of occupational safety on line management. There has in the past, been an underlying failure on the part of line management to recognize their responsibility for implementing Occupational Safety requirements. There has been a tendency to rely on the EH&SP organization to take the lead in implementing safety program requirements and correcting deficiencies.

A distinct shift in this attitude has occurred in the last year at GEND. GEND management has initiated, through their Technical Safety Assurance Team and supporting Safety Assurance Initiative Teams, a very comprehensive program to identify existing occupational safety program deficiencies and opportunities for improvements. As a result, a number of corrective actions continue to be made at Pinellas. A product of this effort, The Pinellas Plant Environmental, Safety, and Health Self Assessment and Long Range Improvement Plan will help to ensure that the needs identified for program improvement continue to be pursued.

The professional mix in Employee and Plant Safety appears to be very complementary and successful. The Employee and Plant Safety Manager has a strong academic and experience background in safety and health, and is supported by an occupational safety staff with a strong knowledge of the Pinellas Plant operation. Several staff members have transferred into the Employee and Plant Safety organization from manufacturing/production.

With the exception of limited availability of staffing resources in the EH&SP organization, necessary budget resources have been available. Prioritization

of safety concerns in the work control and capital expenditure systems appear appropriate, receiving considerably increased emphasis in the last year.

The EH&SP organization performs periodic scheduled inspections of the work areas at Pinellas Plant, but each area is typically inspected only once or twice a year. Construction areas are visited several times per day, but no documented formal inspections are conducted. A program to perform internal independent appraisals of the safety program or the EH&SP organization performance has not been implemented, and AL and PAO occupational safety oversight activities are insufficient to effectively provide GEND management adequate program guidance or to measure program performance. A shift has been made in the last year to provide increased independent oversight, in that GEND formed an internal Technical Safety Assurance Team, and has hired outside firms to conduct an OSHA inspection and Life Safety Code inspection.

Communication systems are in place to ensure that occupational safety concerns are communicated in a timely manner within and outside of GEND. An active safety suggestion program is in place. New employees are provided safety orientations and all employees are informed annually of the DOE safety and health program and their right to submit safety complaints to DOE.

GEND has recognized and corrected a number of safety compliance concerns identified by internal TSA teams and outside consultants in the past year. The GEND "Pride in the Work Place" program and Safety Assurance Initiative for Housekeeping have been very successful. Machine-guarding compliance is very good in the majority of the facility, and housekeeping is excellent throughout the Pinellas Plant.

However, potentially serious safety hazards and code violations were noted during this appraisal that need immediate attention by GEND management. Violations identified include improper hoisting and rigging practices by subcontractors (e.g., standing directly under a suspended load), subcontractor employees working immediately next to the edge of the Bldg. 100 roof with no fall protection, a GEND employee operating a table saw with no blade guard or anti-kickback device, and failure to properly maintain and test electrical safety gloves and mats. A Category II Concern (OS.5-1) has been identified to address these violations. While a number of the violations were corrected immediately, GEND should review the remaining violations, correct those that can be corrected immediately, and prepare a plan for correction of the remaining violations.

A number of deficiencies were noted in a 1988 Explosives Safety Appraisal conducted at Pinellas Plant. Since that appraisal, GEND has been responsive in upgrading the GEND explosives safety program to meet the requirements of the DOE Explosives Safety Manual and 29 CFR 1910, Subpart H.

Investigations are conducted by GEND EH&SP for all recordable injuries and incidents. However, accident analysis and follow-up have been inadequate to ensure identification of probable cause and judgment of need. Review of injury statistics revealed that the majority of GEND lost time injuries and lost work days for 1989 are from back/neck related injuries, but no program to reduce back injuries has been implemented. Review of a UOR on a 1977 fatality at GEND revealed hoisting and rigging program deficiencies as contributing causes; yet no hoisting and rigging program has been implemented.

GEND injury rates for 1989 places them 14 out of 14 for production contractors and 38 out of 38 for construction subcontractors in the January-September 1989 Occupational Injury and Property Damage Summary. While failure to recognize and respond to accident/injury trends has impacted GEND accident rates, extremely conservative injury classification practices have also contributed significantly to rate increases.

Approximately 2 to 3 years ago, GEND management made a change to their injury classification practices to more realistically reflect injury statistics that can be compared to private industry performance. This positive proactive approach by GEND in managing their injury rates makes it difficult to compare GEND injury rates with those of other DOE contractors.

4.5.13.2 Findings and Concerns

OS.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Site and facility organization and administration should ensure effective implementation and control of the occupation safety program.

- FINDINGS:**
- o GEND policy specifies that line management is responsible for safety program implementation; however, instances of line management failure to implement ES&H requirements were noted during facility walkarounds. (See Section OS.5.)
 - o Discussions with GEND line management and support personnel revealed a failure on the part of some line management personnel to recognize their responsibility, and assume ownership for implementing ES&H requirements in their area. There is a tendency for line supervisors to refer safety problems to the EH&SP organization for evaluation and correction rather than taking the initiative to correct the problem themselves. Accordingly, there is a tendency for employees to go directly to the EH&SP personnel, bypassing their supervision. This situation is probably aggravated by the absence of formal training for line management in recognizing, understanding and implementing their safety and health responsibilities.
 - o Day-to-day construction safety is implemented by the EH&SP construction safety specialist directly with the construction contractors. Construction job sites were observed where the GEND construction escort and the GEND Projects Engineering Quality Assurance personnel were present, but did not take the initiative to correct obvious safety violations (e.g., personnel not wearing required hard hats). The violations were corrected by the EH&SP Safety specialist as soon as they were observed.

CONCERN: Line management is not implementing the occupational safety program requirements in accordance with GEND policy.
(OS.1-1)
(H2/C2)

- FINDINGS:**
- o The EH&SP organization frequently performs typical line management safety functions, including day-to-day implementation of safety requirements, keeping of pressure safety and spinner safety certification records, maintaining as built (configuration control) drawings for plant systems (such as the hydrogen system) and control of the lockout tagout forms and records. Performing these functions diverts EH&S resources from oversight functions.

- o No independent, internal audits (other than facility/area/equipment inspections) of the GEND safety and health programs have been conducted by EH&SP; nor has there been any internal audits of the EH&SP organization performance. GEND has, in the past year, hired outside consultants to conduct various reviews, including OSHA compliance and Life Safety Code compliance.

CONCERN: See Concerns OA.2-1 and OA.2-2.

- FINDINGS:**
- o GEND safety and health performance objectives for the Pinellas Plant are not developed and used.
 - o Performance objectives for safety and health were not included in management or employee job descriptions or performance appraisals in the past. Safety and health performance objectives will be incorporated into these documents for 1990, and a ES&H Long Range Plan has been developed which identifies some specific safety and health objectives.

CONCERN: See Concerns OA.1-1 and OA.3-1.

OS.2 PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Procedures and documentation should provide appropriate direction, record generation, and support for the occupational safety program.

- FINDINGS:**
- o Document control of safety and health related manuals and procedures has been inconsistent. There is no clear mechanism for verifying that the manual includes the most current revision.
 - o There are inconsistencies in safety and health requirements between GEND manuals. Examples include: the Pressure Safety Manual references GOP E.4.01 (E.4.01 could not be located), yet GOP G.1.14, "Pressure Systems/Vessels (PS/V)" addresses pressure safety; several inconsistencies in responsibility and protocol exist between the various procedures that address when, how, and through what mechanisms EH&SP gets involved in review and approval of new or modified designs/installations (e.g., EH&S Manual, Section 1.6; GOP G.106; MI 2.501; MI 3.603; and MI 5.706).
 - o Safety and Health requirements are not consistently included or referenced in the operation and maintenance procedures in place at GEND. PMIs, OIs, and MEEIs do not consistently identify the need for lockout/tagout, Special Work Permits or other applicable safety concerns (e.g., PMI M229, M247, H001, H002, M004, and M259).
 - o A number of EH&S Manual procedures and GOPs do not identify specific implementation responsibilities and updated protocol (e.g., EH & S Manual, Sections 4.4, 4.7, 4.11, 4.12, 4.13, and 4.15).
 - o The scope of the EH&S Manual does not cover all hazards at GEND. For example, there are no safety and health standards that address argon, hoisting and rigging, chemistry laboratory safety, carcinogens, hazardous waste worker safety and health, hazards communications (in draft), asbestos, and ergonomics.

CONCERN: See Concern OA.7-2.

OS.3 MANAGEMENT OF SAFETY CONCERNS

PERFORMANCE OBJECTIVE: Physical and/or other environmental stresses arising in the work place should be identified, evaluated, and controlled.

- FINDINGS:**
- o The GEND Department Safety Committee has not been an active, contributing entity.
 - o There is no safety assessment for the Pinellas Plant, nor are formal, documented hazards analyses performed for many of the Pinellas programs or facilities. Hazards analyses have not been conducted for high hazard systems, such as the liquid and gaseous oxygen and hydrogen systems, the argon system, or for high hazard areas such as Bldg. 600, Chemical Storage. (See Concern OA.7-1.)
 - o Formal hazards surveys are not conducted to identify and document known safety and health hazards present in the various work areas within the Pinellas Plant. Formal inspection or compliance type walk throughs of each area conducted approximately one or twice a year, are not sufficient in frequency or scope to identify existing and potential safety concerns inherent to the processes, equipment, and operations. (See Section IH.3.)
 - o Safety and health review of new processes, equipment, and design is not consistently performed. For example: EH&SP has reviewed some PMIs but not others; EH&SP is included in initial design reviews, but is not necessarily included again if subsequent design changes are made.
 - o EH&SP personnel do not review Service Requests, and the personnel responsible for reviewing the requests and performing the work, including the Maintenance Planner, Supervisors, and the Maintenance Craftsmen have not been trained to identify or evaluate hazards.

CONCERN: Programs for identification and evaluation of potential safety and health concerns at the Pinellas Plant have not been adequately developed or implemented.
(OS.3-1)
(H2/C2)

OS.4 SURVEILLANCE OF SAFETY CONCERNS

PERFORMANCE OBJECTIVE: Appropriate surveillance of activities should be conducted to measure safety performance and ensure the continued effectiveness of controls.

- FINDINGS:**
- o While accident investigations are conducted by ES&H for all recordable or reportable accidents/incidents, investigations, or follow-ups are not conducted for the majority of first aid cases.
 - o There is no formal, documented requirement for supervisors to be involved in investigation of accidents involving their subordinates. The injured employee's supervisor is normally not involved in the accident investigation until late in the process and normally only with regard to implementing corrective action, if applicable. In many first aid cases, if the employee does not report the injury to the supervisor, there is no assurance that the supervisor will be aware that the employee was injured. Subsequent follow-up and corrective measures by the supervisor are thus jeopardized.
 - o Review of past accident investigations indicates that root cause(s) and possible lessons learned are not identified and applied on a plant-wide basis:
 - An employee incurred a lost-time injury due to carpal tunnel syndrome reportedly related to keyboard work. Yet, the accident investigation report did not feed into a follow-on activity to evaluate and address similar exposure throughout the plant.
 - The investigation report of a 1977 fatality at the Pinellas Plant listed hoisting and rigging related failures, including lack of training and improper use of the equipment, as contributing probable causes. Yet no hoisting and rigging program exists at the Pinellas Plant to ensure proper qualification of operators and riggers. (See Section OS.5.)

CONCERN: Accident investigation and follow-up at the Pinellas Plant are inadequate to ensure identification of probable cause and judgment of needs to prevent recurrence of similar accidents.
(OS.4-1)
(H2/C2)

- FINDINGS:**
- o A database system for conducting safety performance reporting and analysis has been available for 2 years, but has not been effectively put on-line to input data and to work database program startup problems.
 - o GEND form FL-205-A, Medical Case Record used to record occupational injuries and illnesses, does not include sufficient information for effective analyses of injuries. The form itself does not include a space for recording the

location where the injury/illness occurred. Also, review of completed forms showed that the Medical Department is not obtaining and/or recording sufficiently detailed information regarding the accident from the injured employee at the time of treatment.

- o Supervisors do not receive injury and accident statistics and analyses for their areas. Accordingly, the supervisors may not be aware of problems and trends in their area.
- o Review of 1989 reportable injuries at GEND revealed that approximately 50 percent of the lost workday cases and lost workdays were due to back/neck injuries. The injury records also indicated three cumulative trauma-type injuries resulting in 31 lost workdays, and discussions with the GEND Medical Director indicate that there is an increasing number of cumulative trauma injuries occurring. Yet, no programs have been implemented to reduce back-related injuries or cumulative trauma injuries.

CONCERN: Analyses, and/or communications to management, of accident and injury data have been inadequate to evaluate performance and identify trends and potential problem areas.
(OS.4-2)
(H2/C2)

- FINDINGS:**
- o While daily walk-throughs are conducted by EH&S, safety surveillances of construction activities are not documented and transmitted to the project engineer and then to the subcontractor in accordance with the EH&S Manual Standard 1.30, "Safety, Health, Fire and Environmental Protection Requirements for Construction Workers." AL 5480.9, "Construction Safety and Health Program," requires a minimum of two inspections per month.
 - o EH&SP conducts inspections of work areas; but, surveillance of each area occurs only once or twice a year. This frequency is considered inadequate to effectively monitor and document safety compliance.
 - o Line management assigns safety monitors to perform periodic surveillance of their areas; but, from review of surveillance reports and discussions with GEND personnel, many of the safety monitor surveillances are judged to have been superficial.

CONCERN: The GEND Safety Surveillance Program at the Pinellas Plant is not adequate in frequency, scope, or documentation to ensure measurement and control of safety performance.
(OS.4-3)
(H2/C1)

- FINDINGS:**
- o Review of the AL and PAO surveillance reports, including the PAO walkarounds and AL OSHA-type inspections, as well as discussions with GEND employees, indicate that the DOE surveillance of the Pinellas Plant has been inadequate. A number of OSHA-type violations were noted by an outside consultant hired by GEND to conduct an OSHA inspection, and

several violations are noted in this report. (See Sections OS.5 and IH.5.) Yet, the last two AL OSHA-type inspections resulted in minimal findings.

- o Previous appraisals by AL had rated the industrial hygiene program as "meeting or exceeding the established DOE guides and recommended good practices." This rating cannot be concurred with by this appraisal. (See Sections IH.1 through IH.6.)
- o AL Orders and directives do not provide adequate safety and health program implementation guidance to GEND management:
 - AL Orders do not invoke the DOE Hoisting and Rigging Manual; and, there is no evidence that through surveillance or oversight, DOE has clearly expected GEND to implement a hoisting and rigging program.
 - AL has not issued an implementing order for DOE 5480.10, "Industrial Hygiene."

CONCERN:
(OS.4-4)
(H2/C2)

The AL surveillance program at the Pinellas Plant does not provide GEND management clear guidance regarding safety and health program performance, nor does it accurately measure GEND performance results.

OS.5 COMPLIANCE WITH OCCUPATIONAL SAFETY STANDARDS

PERFORMANCE OBJECTIVE: Work places should be free of uncontrolled physical safety concerns and be in compliance with DOE-prescribed occupational safety standards.

- FINDINGS:**
- o An EH&S procedure exists for handling liquid nitrogen; however, instances were observed when acceptable standards were not followed:
 - GEND employees and delivery vendors were observed transferring liquid nitrogen without proper eye/face protection.
 - The employees working with liquid nitrogen are not provided cryogenic safety training, nor are there any specific operating procedures for transferring liquid nitrogen.
 - o The GEND hoisting and rigging program does not comply with the DOE Hoisting and Rigging Manual or OSHA requirements:
 - The GEND procedures do not incorporate the requirements of the DOE Hoisting and Rigging Manual.
 - High consequence lifts are not identified, even though there have in the past been instances where large, heavy objects were lifted by helicopter over the main plant buildings.
 - Hoist operators and riggers have not been trained or qualified.
 - Load tests of the hoists and rigging are not conducted.
 - A number of hoisting and rigging violations by GEND subcontractors were noted, including standing directly under a suspended load, improper use of wire rope slings, and improper rigging techniques using synthetic mesh slings.
 - o Documented required qualification/requalification training programs are not established for electricians, power press operators, and boiler operators. (See Concern TC.1-1.)
 - o Ladders and guardrails throughout the plant appear adequate and well maintained. However, GEND subcontractors were observed standing next to the parapet of the roof of Bldg. 100 with no guard rail or fall protection as required by ES&H Standard 1.4, "Elevated Work Surfaces," and as required by OSHA. A subcontractor employee was also observed standing on the top rung of a portable ladder.

- o GEND has implemented a good machine guarding program; however, a GEND employee was observed operating a table saw in the carpenter shop with no blade guard or anti-kickback device. (After the same violation had been noted in earlier safety inspections and supervision was aware of the continuing violation.)
- o GEND is actively incorporating the newly promulgated OSHA standard for lockout/tagout into GEND procedures and programs. They have gone through several revisions to their procedures, and have another draft ready to issue. This has created a need to conduct additional training for employees and supervision and to incorporate the new procedure requirements in facilities and maintenance procedures, standards, and work packages. Also, the GEND implementation of the lockout/tagout procedure has not included hazardous energy sources other than energized electrical circuits. As a result, yellow caution tags are used on valves inappropriately to protect personnel from injury that could occur if someone opened the valve.
- o GEND has a preventive maintenance instruction for testing of high voltage electrical safety devices including gloves, mats, and hot sticks. However, the devices have not been adequately inventoried or controlled as evidenced by the fact that high voltage gloves that were last tested in 1985, were found in one of the high voltage rooms; and torn and cracked mats were found that were last tested in 1988.
- o Exit signs are not installed in all required areas per the Life Safety Code. (See Section FP.2.)
- o The area around the hydrogen lines on the south side of the Utility Bldg. is not posted, "No Smoking."
- o A GEND employee was observed smoking in the immediate (posted) area of the liquid oxygen tank.

CONCERN:
(OS.5-1)
(H1/C1)
CAT II

The Pinellas Plant does not comply with all DOE-prescribed Occupational Safety Standards.

OS.6 PERSONNEL COMMUNICATION PROGRAM

PERFORMANCE OBJECTIVE: Site/facility personnel should be adequately informed of physical stresses that may be encountered in their work environment.

FINDINGS: o Although there is training provided to the GEND employees for safety hazards and awareness, it has not been well organized and coordinated. Application throughout GEND has not been consistent, and important safety subjects have not been included. For example, there is no formal documented training for cryogenic safety, chemistry laboratory safety, back injury prevention, and ergonomics.

CONCERNS: See Concern TC.1-1.

4.5.14 Fire Protection

4.5.14.1 Overview

The scope of the Fire Protection appraisal consisted of a review of previous external audits, appraisals, and assessments; a review of special hazards; the verification of fire system testing and inspections; a general review of policies and procedures; and a brief inspection of all facilities and operations at the Pinellas Plant site. The safety management organizational structure, fire protection specialist duties, and program implementation by line-management was also assessed. All of the Fire Protection Performance Objectives were reviewed during this appraisal.

The level of routine day-to-day fire protection support of line-management is exceptional. However, the required independent overview aspects of the program are not in place at this time. The fire protection organization at GEND performs many duties (such as permit and impairment implementation) which at most sites would be performed by other line-management organizations. While this is not detrimental to the overall program, the current assignment of fire protection responsibilities does not provide the necessary independent overview of the program.

The fire protection organization is well defined and appropriate resources have been allocated to accomplish the currently assigned tasks. These tasks do not include the DOE mandated level of overview activities. Although most of the fire protection program requirements are being successfully implemented, some requirements have not been properly documented. In many instances the implementation has been accomplished through direct support of the fire protection staff and not because of line-management efforts or compliance to documented requirements.

While most facilities and operations onsite provide an adequate level of life safety features, numerous violations of the Life Safety Code were noted during this appraisal and confirmed from a consultant review done in October 1989. This has been identified as a Category II concern. A formal corrective action plan has not been issued to correct the deficiencies noted in the consultant report. Development of a program requirement document and an implementation strategy is essential to ensure compliance with NFPA 101, "Life Safety Code."

Facilities are for the most part provided with adequate fire protection to minimize the potential threat to the public and programmatic impacts as the result of an onsite fire. Exceptions to this statement may exist involving some critical testing and operational equipment, the flammable liquids storage area, and some clean rooms. An engineering assessment has not been prepared to evaluate these specific areas and the impacts that may result from a fire. With the installation of strong physical fire protection features (sprinklers, numerous fire barrier walls, etc.), the loss from a credible fire would not be expected to exceed the limits established in the DOE Orders. Even though there are some program deficiencies involving fire barrier integrity and flammable liquids usage, other provided features would tend to mitigate the consequences to prevent an unacceptable property loss.

The onsite fire brigade provides first response capabilities in the event of a plant emergency. While there is an active brigade training program, the

program currently does not include training to some required standards such as NFPA 1500 and OSHA 1910.120. Tours, drills, and prefire plan updates are not being conducted at a frequency to assure effectiveness. Formal agreements have been established with local emergency response agencies.

Fire protection personnel are included in the design review process. However, in some instances they actually review their own design input that was provided to support the engineering function. A formal fire protection engineering survey and appraisal program has not been established.

GEND has an exceptional fire protection inspection and testing program that exceeds NFPA requirements. Some mandatory technical fire protection system features (such as proper manual actuation of a deluge system, and electronic supervision for the building communication system) have not been implemented. These technical deficiencies, the lack of a formal fire protection engineering survey and appraisal program, and the lack of a formal Safety Analysis Report, Fire Hazard Analysis, or similar document support a concern of inadequate overview of the fire protection program.

4.5.14.2 Findings and Concerns

FP.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Fire protection organization and administration should ensure the effective implementation and control of fire protection equipment and activities.

- FINDINGS:**
- o A documented preventive maintenance program to inspect and maintain all rated fire barriers has not been required or established.
 - o Although implementation practices have been successful, there were no formal program requirements or procedures for managing fire protection impairments.
 - o Program requirements in DOE 5480.7 have not been established for conducting the mandatory internal fire protection engineering surveys or fire protection appraisal program.

CONCERN: Policy and technical program requirements have not been fully established to ensure the effective implementation and control of the overall fire protection program as required by DOE 5480.7.
(FP.1-1)
(H2/C1)

FP.2 LIFE PROTECTION

PERFORMANCE OBJECTIVE: All facilities on site should provide adequate life safety provisions against the effects of fire.

- FINDINGS:**
- o Numerous Life Safety Code violations were noted during this assessment. These include the following:
 - Only one exit exists from some high hazard areas (paint booths in Area 111 and Area 138).
 - Improper hardware (door latches) was provided on Doors 18, 19, 20, 21, 22, and the washing room door from Area 108.
 - There was no approved manual fire alarm or equivalent system in Bldgs. 100, 200, 300, and 400. (See Section FP.7.)
 - Many doors on egress routes did not swing in the direction of exit travel.
 - Some identified areas exceed a maximum 50-ft common path of travel.
 - Exit signs were not installed in all required locations.
 - Five unenclosed stairwells require 1-hour fire-rated construction.
 - o Formal program requirements have not been established to assure design conformance to the Life Safety Code.

CONCERN: Formal program requirements and implementation strategies (FP.2-1) have not been established to ensure compliance with NFPA (H1/C1) 101 "Life Safety Code" requirements.
CAT II

FP.3 PUBLIC PROTECTION

PERFORMANCE OBJECTIVE: All facilities on site should provide adequate protection to prevent any added threat to the public as the result of an onsite fire causing the release of hazardous materials beyond the site (or facility) boundary.

- FINDINGS:**
- o Flammable liquids stored in Bldg. 600 were not protected by proper fire protection features as required by DOE 5480.7, "improved risk" criteria and NFPA standards, including the following:
 - The exclusion of dispensing operations in the storage area,
 - Pressure relief bung vents for all flammable liquid drums in use, and
 - In-rack sprinklers for storage racks.
 - o The impacts of the above deficiencies on the containment of hazardous materials during a fire have been neither analyzed nor documented.
 - o No Safety Analysis Report, Fire Hazards Analysis, or similar document has been prepared to evaluate the potential for release of hazardous materials as the result of a fire. (See Concern OA.7-1.)

CONCERN: (FP.3-1)
(H2/C1) The potential threat to the public as the result of an onsite fire causing the release of hazardous materials has not been assessed as required by DOE 5480.7, "Improved Risk" criteria.

- FINDINGS:**
- o The fire protection water run-off has not been considered for the design of the proposed drainage system upgrades in Bldg. 600.
 - o Liquid water run-off control has not been assessed for all facilities.

CONCERN: (FP.3-2)
(H2/C2) Means have not been provided for controlling liquid run-offs from a credible fire to ensure containment of potential contaminants.

FP.4 IMPAIRMENT OF OPERATIONS

PERFORMANCE OBJECTIVE: The site should not be vulnerable to being shut down for an unacceptable period as the result of a credible fire.

- FINDINGS:**
- o No documented engineering assessments have been prepared to review potential delays in programmatic activities including those that could result from a fire loss involving the "one-of-a-kind" product testers in Bldgs. 100, 200, 400, and 800.
 - o Potential program delays have not been adequately assessed as required by DOE 5480.7, concerning the fire-loss potential in those clean rooms that are not provided with the current level of required fire protection.
 - o Vulnerability studies have been prepared to assess security operations for some critical production areas.

CONCERN: Production programs have not been assessed to identify their potential vulnerabilities to delays and to other impacts that would result from a credible fire, as required by DOE 5480.7.
(FP.4-1)
(H2/C1)

FP.6 FIRE DEPARTMENT OPERATIONS

PERFORMANCE OBJECTIVE: The Fire Department should have the capacity to promptly terminate and mitigate the effects of a fire in a safe and effective manner.

- FINDINGS:**
- o An implementation plan has not been developed to achieve compliance with NFPA Standard 1500, "Fire Department Occupational Safety and Health Program."
 - o An implementation plan has not been developed to achieve compliance with OSHA 1910.120 concerning emergency response to hazardous waste operations.
 - o Simulated emergency drills are not conducted at a frequency to assure that fire brigade members are familiar with the facilities and emergency equipment:
 - The brigade has not performed a simulated drill in nearly a year.
 - The off-shift brigade members have not participated in simulated drills.
 - o The prefire plan by the offsite fire department does not include all facilities and has not been updated for over 2 years.
 - o Internal prefire plans have not been provided for all special operations and facilities.
 - o The offsite fire department has not made a complete tour of the facility in over 2 years.
 - o Not all members of the onsite fire brigade have toured all buildings on a quarterly basis.

CONCERN:
(FP.6-1)
(H2/C1)

The offsite fire department and plant fire brigade cannot ensure the prompt termination of the effects of a fire in a safe and effective manner, due to a less-than-required level of training, participation with simulated drills, prefire planning, and facility tours.

FP.7 PROGRAM IMPLEMENTATION

PERFORMANCE OBJECTIVE: A fire protection engineering program should be in place to effectively provide and maintain an "improved risk" level of fire protection.

- FINDINGS:**
- o The manual release stations for the cooling tower deluge sprinkler system are not installed in a manner that permits actuation of both deluge systems with the operation of a single manual release.
 - o The public address system is not provided with adequate electronic supervision as required by NFPA 72A and 72D to meet the equivalency requirements for a local alarm system.
 - o A documented fire barrier maintenance program is not in place.
 - o Some clean rooms are not provided with the fire protection features needed to meet current DOE requirements.
 - o Life Safety Code (NFPA 101) violations exist. (See Concern FP.2-1.)
 - o Evaluations of the consequences of potential fires have not been made or documented as required by DOE 5480.7. (See Concerns FP.3-1 and FP.4-1.)

CONCERN:
(FP.7-1)
(H2/C1)
An internal fire protection survey and appraisal program is not in place to assess risks, programmatic interruption potential, and the adequacy of fire control devices to qualify for the "improved risk" level of fire protection, as required by DOE 5480.7.

- FINDINGS:**
- o Quantity limitations for flammable liquids used without safety cans have not been enforced.
 - o Liquid run-off control, including the anticipated use of fire protection system water, has not been considered for the flammable liquids storage area of Bldg. 600. (See Concern FP.3-2.)
 - o Flammable liquids are not properly protected in Bldg. 600. (See Concern FP.3-1.)
 - o The exhaust fan on the new paint spray booth in Bldg. 700 is not interlocked.

CONCERN:
(FP.7-2)
(H2/C1)
Fire protection features to assure the safe use of flammable materials are not being utilized in accordance with an "improved risk" level of protection as required by DOE 5480.7.

- FINDINGS:**
- o The fire protection staff is actively involved in the day-to-day activities directly associated with support of the facility. Many of these duties (such as permit preparation and impairment implementation) would normally be performed by other line-management organizations.
 - o A formal system to track and document internal fire protection deficiencies has not been established.
 - o An internal fire protection survey and appraisal program has not been established. (See Concern FP.7-1.)
 - o An adequate level of independent overview of the fire protection program has not been established and implemented.

CONCERN: See Concern OA.2-2.

4.5.15 Medical Services

4.5.15.1 Overview

This appraisal addressed all Medical Services Performance Objectives. GEND has a well structured occupational medicine program directed by a progressive and experienced Medical Director, who is retiring in the near future. During the last DOE appraisal conducted in February 1988, 10 recommendations were presented. Although the final draft of the appraisal report was not received by PAO until April 1989, four of these have been completed and action plans with completion dates are in place for the rest.

There is an open line of communication between the physician and top management of the contractor, as well as top management of PAO. Site personnel are informed by Medical, Industrial Hygiene, and/or Health Physics of medical hazards that may be encountered and what services are available to protect them against these hazards. Medical screening and testing is adequate for prehire health evaluations and employees. Pensioned employees are not given examinations because of GE policy. Mandatory, periodic examinations are scheduled for those active employees subjected to occupational stresses, such as methylene dianiline (MDA), asbestos, etc. This program also includes people involved in new processes, at least until baselines are established.

Treatment is adequate for both occupational and non-occupational injuries and illnesses. Simple personal injuries and illness are treated by the plant physician, lessening health costs considerably as employees need not miss work time. Serious or life threatening personal conditions, occupationally or otherwise derived, are referred to a qualified specialist or to the person's private physician. The Medical Staff is well trained. The physician undertakes 100 hours of continuing education annually and the nurses receive at least 20 hours per year. There are also two physicians offsite who cover the plant, on an on-call basis, during any absence of the plant physician; one physician is "Q-cleared."

Policies, procedures, and practices are reviewed both locally and by an official DOE audit done approximately every 2 years. Medical procedures are well documented and include Corporate and GEND procedures, plus those of DOE, all included in manuals. Letters of understanding identify the responsibilities of offsite medical care (i.e., local hospitals), and video tapes pertaining to the specialized care that may be needed for GEND employees have been provided to the attending medical staffs. The Seminole Fire Department Rescue Squad is approximately 3 to 5 minutes away and responds when solicited to all medical emergencies.

While the program meets the basic intent of DOE 5480.8, four concerns were noted. First, there is a need for an additional half-time doctor and one additional full-time nurse. Second, the physical quarters are overcrowded; more space was recommended in 1984 and planned for in 1985, but has not yet been provided. Third, the medical records are not protected adequately against environmental damage. Fourth, GEND does not have documented procedures that will ensure effective assessment of the medical/physical fitness for duty of subcontract employees and GEND employees with known medical problems.

Noteworthy practices were identified with respect to the GEND protocol for handling radiation-contaminated persons, and with respect to the documentation of the recently developed Convalescence Assistance to Recovering Employees (CARE) program at GEND.

4.5.15.2 Findings and Concerns

MS.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Site and facility organization and administration should assure effective implementation and control of the medical services program.

- FINDINGS:**
- o Medical records are stored in a closet-sized room with a water sprinkler overhead. The records are in drawers with no direct access to the sprinkler fire suppression; moreover, the records would be destroyed by direct exposure to water.
 - o Medical records are not maintained under a controlled environment.

CONCERN: Medical records are not protected against environmental damage from fire, water, humidity, or excess temperature.
(MS.1-1)
(H2/C2)

MS.2 PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Procedures and documentation should provide appropriate direction, record generation, and support of the medical services for the facility and site.

- FINDINGS:**
- o GEND does not have a documented policy to include the employee's supervisor, the Medical Director, the employee's attending physician, and EH&SP in case reviews when making job restriction determinations following reported medical problems.
 - o The physical demands for the various GEND job classifications have not been documented.
 - o Subcontractor employee medical history, or fitness for duty, is not evaluated nor is there requirement(s) for subcontractor certification included in subcontract specifications.

CONCERN: GEND does not have documented procedures that will ensure effective assessment of the medical/physical fitness for duty as related to the specific job duties, responsibilities, and stresses for subcontract employees and GEND employees with known medical problems.
(MS.2-1)
(H2/C2)

MS.3 MEDICAL TREATMENT

PERFORMANCE OBJECTIVE: Medical treatment should be available and provided by qualified, competent staff, and adequate facilities should be available.

- FINDINGS:**
- o DOE 5480.8 serves as the reference for services needed to support the facility. Medical staff members onsite were well trained in their respective jobs; but additional staff (estimated at one doctor half-time and one nurse full-time) would be required to provide sufficient medical service.
 - o Additional services will be required for the proposed DOE drug testing program and epidemiology program, as well as for the recently initiated optimal Convalescence Assistance to Recovering Employees (CARE) program.
 - o The medical equipment was adequate, but too congested for efficient operation.
 - o Nursing station and treatment facilities are overcrowded.

CONCERN: The size of the medical staff is not sufficient for the work load.
(MS.3-1)
(H2/C2)

- FINDINGS:**
- o Supplies and equipment for medical tests were adequate; but available space for tests was not. As many as four separate tests were done in one room, with a consequent lack of privacy or ability to concentrate. The treatment room doubled as the phlebotomy (blood taking) room. Electrocardiograms were done on one of the recovery beds, with only a screen around it. For females especially, this and similar practices provided inadequate privacy.
 - o Verbal responses to medical history and treatment queries can be heard by patients in adjacent treatment or waiting areas.

CONCERN: Privacy and space are not sufficient for required medical services.
(MS.3-2)
(H2/C2)

4.6 Noteworthy Practices

Noteworthy Practices are exceptional ways of accomplishing a Performance Objective or some aspect of it. Other DOE facilities are encouraged to adopt these practices when they are applicable to their operation.

IH.6 PERSONNEL COMMUNICATION PROGRAM

PERFORMANCE OBJECTIVE: Site/facility personnel should be adequately informed of chemical and biological stress that may be encountered in their work environment.

NOTEWORTHY PRACTICE: GEND has effectively implemented a modified version of an industry standard chemical hazard labeling system in a manner that significantly enhances its utility for chemical control. The NFPA 704 "Diamond" Hazard Identification System has been modified to include simple codes for chemical storage and disposal. This was achieved by "splitting" the bottom position on the "diamond" label into code identifiers for storage and disposal. Eight storage category codes, identified by single alpha characters, have been identified as well as 11 disposal categories encoded by numeric characters. The disposal categories are enhanced with subcodes for special disposal considerations.

The system is easily understood by workers and can be readily applied to most industrial and laboratory facilities. GEND utilizes computer generated labels that are affixed at the time of material receipt, thus assuring that the pertinent information is exhibited and thus minimizing improper storage or disposal practices in the Plant. Plant tours and interviews demonstrated the program effectiveness. GEND has developed supporting software that may be readily adaptable at other DOE Facilities.

MS.1 ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Site and facility organization and administration should ensure effective implementation and control of the medical services program.

NOTEWORTHY PRACTICE: GE has recently developed their CARE program. This stands for Convalescence Assistance to Recovering Employees. It is a collective team effort of GEND Management, the Health Care Manager, the Employee Benefit Section, and Medical (doctor and/or nurse). The GEND program, although not new, is the first to be succinctly specified in formal documentation. By arranging for limited work assignments during recovery to normal state, it expedites the employee's return to work.

MS.2 PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Procedures and documentation should provide appropriate direction, record generation, and support of the medical services for the facility and site.

NOTEWORTHY PRACTICE: Although GEND has had little occasion for its use, they have issued an excellent protocol for handling radiation-contaminated persons. The duties of each person are outlined so that one can "brush up" quickly, while waiting for the patient.

4.7 System for Categorizing Concerns

Each concern contained in this report has been characterized using the following three sets of criteria:

- A. CATEGORY I: Addresses a situation for which a "clear and present" danger exists to workers or members of the public. A concern in this category is to be immediately conveyed to the managers of the facility for action. If a clear and present danger exists, the Assistant Secretary for Environment, Safety, and Health, or his/her designee, is informed immediately so that consideration may be given to exercising the Secretary's facility shutdown authority or directing other immediate mitigation measures.

CATEGORY II: Addresses a significant risk or substantial noncompliance with DOE Orders (but does not involve a situation for which a clear and present danger exists to workers or members of the public). A concern in this category is to be conveyed to the manager of the facility no later than the appraisal close-out meeting for immediate attention. Category II concerns have a significance and urgency such that the necessary field response should not be delayed until the preparation of a final report or the routine development of an action plan. Again, consideration should be given to whether compensatory measures, mitigation, or facility shutdown are warranted under the circumstances.

CATEGORY III: Addresses significant noncompliance with DOE Orders, or the need for improvement in the margin of safety, but is not of sufficient urgency to require immediate attention.

- B. Hazard Level 1: Has the potential for causing a severe occupational injury, illness, fatality, or loss of the facility.
- Hazard Level 2: Has the potential for causing minor occupational injury or illness, or major property damage, or has the potential for resulting in, or contributing to, unnecessary exposure to radiation or toxic substances.
- Hazard Level 3: Has little potential for threatening safety, health, or property.
- C. Compliance Level 1: Does not comply with DOE Orders, prescribed policies or standards, or documented accepted practices. The latter is a professional judgment based on the acceptance and applicability of national consensus standards not prescribed by DOE requirements.
- Compliance Level 2: Does not comply with DOE references, standards, guidance, or with good practice (as derived from industry experience, but not based on national consensus standards).

Compliance Level 3:

Has little or no compliance considerations; these concerns are based on professional judgment in pursuit of excellence in design or practice (i.e., these are improvement for their own sake, and are not deficiency-driven).

4.8 Categorization and Tabulation of Concerns

Using the criteria in Appendix A, the majority of the concerns have been categorized as Category III for seriousness. Four concerns have been identified as Category II issues requiring prompt management attention. The concerns have also been characterized by potential risk and compliance considerations. Attachment B-1 of this Appendix summarizes the results of the characterizations.

All of the concerns are tabulated in Attachment B-2 of this Appendix without their supporting bases. The user is cautioned that to fully understand any concern, it is necessary to read its basis in Section II.

4.8.1 Categorization of Concerns

<u>Concern Number</u>	<u>Potential Hazard Level</u>	<u>Compliance Level</u>
OA.1-1	3	2
OA.1-2	3	2
OA.2-1	2	1
OA.2-2	2	1
OA.2-3	1	2
OA.2-4	2	2
OA.3-1	3	2
OA.5-1	2	1
OA.7-1	2	1
OA.7-2	2	2
OA.7-3	2	1
QV.1-1	2	1
QV.1-2	2	1
QV.2-1	2	1
QV.3-1	2	1
QV.3-2 *	1	1
QV.4-1	3	1
QV.5-1	2	1
QV.6-1	2	1
OP.1-1	3	2
OP.1-2	2	2
OP.2-1	2	2
OP.2-2	3	2
OP.3-1	3	2
OP.4-1	3	2
OP.4-2	2	2
OP.4-3	2	1
OP.6-1	2	2
OP.7-1	3	2
OP.8-1	2	2
MA.2-1	2	2
MA.3-1	3	2
MA.5-1	3	2
MA.6-1	3	2
MA.6-2	3	2
TC.1-1	1	1

* Category II

<u>Concern Number</u>	<u>Potential Hazard Level</u>	<u>Compliance Level</u>
AX.1-1	3	2
AX.2-1	3	1
AX.3-1	3	1
AX.5-1	2	2
AX.5-2	2	2
AX.5-3	3	2
AX.5-4	2	2
EP.2-1	1	2
EP.2-2	1	1
EP.2-3	2	1
EP.3-1	1	2
EP.5-1	1	2
EP.6-1	1	1
TS.3-1	3	2
TS.5-1	3	1
TS.6-1	3	2
TS.6-2	3	1
TS.6-3	3	1
TS.6-4	2	1
TS.6-5	2	1
TS.6-6 *	1	1
TS.6-7	3	1
FR.1-1	2	1
FR.5-1	2	1
RP.1-1	2	2
RP.3-1	2	1
RP.3-2	2	1
RP.3-3	2	2
RP.5-1	2	1
RP.7-1	2	2
RP.8-1	2	2
RP.10-1	2	2
IH.1-1	2	1
IH.3-1	2	1
IH.4-1	2	1
IH.4-2	2	1
IH.5-1	2	1
IH.6-1	2	1

*Category II

<u>Concern Number</u>	<u>Potential Hazard Level</u>	<u>Compliance Level</u>
OS.1-1	2	2
OS.3-1	2	2
OS.4-1	2	2
OS.4-2	2	2
OS.4-3	2	1
OS.4-4	2	2
OS.5-1 *	1	1
FP.1-1	2	1
FP.2-1 *	1	1
FP.3-1	2	1
FP.3-2	2	2
FP.4-1	2	1
FP.6-1	2	1
FP.7-1	2	1
FP.7-2	2	1
MS.1-1	2	2
MS.2-1	2	2
MS.3-1	2	2
MS.3-2	2	2

* Category II

4.8.2 Tabulation of Concerns

4.5.1 ORGANIZATION AND ADMINISTRATION

- CONCERN:** The Position Guides for exempt positions are out of date and do not reflect current ES&H responsibilities and authorities.
(OA.1-1)
(H3/C2)
- CONCERN:** Many GEND Section and Subsection mission and function statements do not include ES&H as a functional responsibility.
(OA.1-2)
(H3/C2)
- CONCERN:** EH&SP has been performing some line safety functions and independent safety oversight of the same functions.
(OA.2-1)
(H2/C1)
- CONCERN:** EH&SP does not perform plant-wide functional safety appraisals and does not have a follow-up and tracking system for corrective actions.
(OA.2-2)
(H2/C1)
- CONCERN:** There is no system for involving EH&SP in a timely and effective manner in the review and oversight of all activities and projects that could have safety significance.
(OA.2-3)
(H1/C2)
- CONCERN:** The GEND facility "Smoking/No Smoking" policy is not effective in eliminating passive exposures to secondary tobacco smoke.
(OA.2-4)
(H2/C2)
- CONCERN:** Goals and objectives are in most cases subjective and not stated in such a way that fulfillment or achievement of the goal or objective can be measured; nor are they given appropriate emphasis in management documents.
(OA.3 1)
(H3/C2)
- CONCERN:** The AL/PAO oversight of GEND has not been consistent or effective and has not provided GEND with a true picture of their ES&H program.
(OA.5-1)
(H2/C1)
- CONCERN:** A site-wide safety assessment and subsequent Safety Analysis Reports do not exist for all those product lines, activities, and operations that are determined by the assessment to present a hazard of a type and magnitude not normally encountered and accepted by the public in the course of their everyday living; nor have there been developed operating limits, or Operational Safety Requirements that provide a boundary for the safe operation of the plant.
(OA.7-1)
(H2/C1)
- CONCERN:** GEND does not have a system to ensure that important requirements, instructions, procedures, and documents are properly controlled and available in the workplace to individuals and organizations who need the information.
(OA.7-2)
(H2/C2)

CONCERN: GEND does not assure that procedures are developed, reviewed, and approved for all necessary activities, and does not have a policy that meets DOE requirements to assure consistency in the format, content, review, approval, use, and revision of procedures.
(OA.7-3)
(H2/C1)

4.5.2 QUALITY VERIFICATION

CONCERN: A quality assurance program, as required by ANSI/ASME NQA-1 and GOP A.5.03, has not been fully developed and implemented for GEND Non-Weapons Programs.
(QV.1-1)
(H2/C1)

CONCERN: Quality Program Plans to address the requirements for GEND functions are not fully developed and implemented for all activities as required by DOE 5700.6B and GOP A.5.03.
(QV.1-2)
(H2/C1)

CONCERN: Control and quality assurance requirements for purchased items and material as required by ANSI/ASME NQA-1 for Non-Weapons critical systems have not been developed and implemented for all GEND organizations.
(QV.2-1)
(H2/C1)

CONCERN: Receiving and preinstallation inspection requirements for critical systems in the Non-Weapons programs have not been developed as required by ANSI/ASME NQA-1.
(QV.3-1)
(H2/C1)

CONCERN: There is no control system to assure that used electric control devices will function as intended and that salvage parts used in critical systems have been first verified to be functional.
(QV.3-2)
(H1/C1)
CAT II

CONCERN: Surveys and audits of the calibration status are not sufficiently broad in scope and depth to verify calibration.
(QV.4-1)
(H3/C1)

CONCERN: There is no system for the Non-Weapons Program to identify and control hardware and materials for critical systems in the maintenance area warehouse, and there is no non-conformance reporting system.
(QV.5-1)
(H2/C1)

CONCERN: A system for inspections of critical systems in the Non-Weapons Program is not yet developed in accordance with requirements of ANSI/ASME NQA-1.
(QV.6-1)
(H2/C1)

4.5.3 OPERATIONS

CONCERN: The responsibilities and authority of each position in operations are not contained in a formal document that is available to the employees.
(OP.1-1)
(H3/C2)

CONCERN: Posted operator aids are not administratively controlled and, therefore, their use and posting throughout the facility is neither consistent nor verifiable with respect to validity or accuracy.
(OP.1-2)
(H2/C2)

- CONCERN:** A system is not in place to ensure that the facilities are always in compliance with all requirements of the Safety Analysis Reports.
(OP.2-1)
(H2/C2)
- CONCERN:** Log-keeping practices do not adequately convey the facility status and are not always in accordance with operating instructions.
(OP.2-2)
(H3/C2)
- CONCERN:** A documented system requiring the review and approval of operating procedures by all personnel charged with assuring the adequacy of the procedures does not exist.
(OP.3-1)
(H3/C2)
- CONCERN:** Standards and directives providing a clear, concise statement of acceptable operating status for facilities and major systems have not been established.
(OP.4-1)
(H3/C2)
- CONCERN:** The monitoring of systems and equipment by operations personnel in some facilities is not consistent with acceptable standards.
(OP.4-2)
(H2/C2)
- CONCERN:** EH&S Standard 2.9, "Lockout/Tagout Procedures," reissued August 1, 1989, is not being enforced and does not meet the requirements of DOE 5483.1A and 29 CFR 1910.150.
(OP.4-3)
(H2/C1)
- CONCERN:** The depth and breadth of operator knowledge at some facilities are not commensurate with acceptable industrial practices at facilities of comparable sophistication and complexity.
(OP.6-1)
(H2/C2)
- CONCERN:** GEND has not implemented a documented shift turnover program at all facilities.
(OP.7-1)
(H3/C2)
- CONCERN:** GEND has not fully implemented a program addressing human factors conventions and standards.
(OP.8-1)
(H2/C2)

4.5.4 MAINTENANCE

- CONCERN:** Removal of facilities or equipment no longer in service has not been verified for completion in all instances at GEND.
(MA.2-1)
(H2/C2)
- CONCERN:** A protected, centrally located facility does not exist to support maintenance storage and staging activities.
(MA.3-1)
(H3/C2)
- CONCERN:** The suggested inspection intervals stated in DOE 4330.4 are not being met.
(MA.5-1)
(H3/C2)
- CONCERN:** Generation and updating of Preventive Maintenance Instructions are not being performed in a timely manner.
(MA.6-1)
(H3/C2)

CONCERN: All equipment requiring preventive maintenance has not been identified.
(MA.6-2)
(H3/C2)

4.5.5 TRAINING AND CERTIFICATION

CONCERN: Training at the Pinellas Plant is not supported by GEND policy and standards and is not formally established uniformly across the plant.
(TC.1-1)
(H1/C1)

4.5.6 AUXILIARY SYSTEMS

CONCERN: The functional requirements of each auxiliary system have not been developed and documented.
(AX.1-1)
(H3/C2)

CONCERN: GEND has not implemented a documented program to reduce the total hazardous substances discharged to the environment as required by DOE 5400.3 and DOE 5820.2A.
(AX.2-1)
(H3/C1)

CONCERN: GEND has not implemented a documented program to reduce the solid hazardous waste and solid radioactive waste generated as required by DOE 5400.3 and DOE 5820.2A.
(AX.3-1)
(H3/C1)

CONCERN: The ventilation systems are not checked, tested, and maintained in a manner consistent with generally accepted industrial practices.
(AX.5-1)
(H2/C2)

CONCERN: Online exhaust stack monitors have not been designed and tested in accordance with generally accepted engineering standards, ANSI N13.10-1974 and ANSI N13.1-1969.
(AX.5-2)
(H2/C2)

CONCERN: High efficiency particulate air filters are not regularly tested in accordance with ANSI N510-1980.
(AX.5-3)
(H3/C2)

CONCERN: The fume hood sash positions acceptable for safe operation of the fume hoods are not identified.
(AX.5-4)
(H2/C2)

4.5.7 EMERGENCY PREPAREDNESS

CONCERN: A systematic assessment of credible hazards at the Pinellas Plant has not been incorporated into the emergency plans.
(EP.2-1)
(H1/C2)

CONCERN: Formalized, controlled emergency plans specific to buildings, areas, or operations, as required by DOE N5500.5, have not been developed.
(EP.2-2)
(H1/C1)

CONCERN: Formal, controlled implementing procedures for emergency actions are not established for all operations.
(EP.2-3)
(H2/C1)

- CONCERN:** GEND emergency response personnel performance did not demonstrate proficiency in handling spills of hazardous materials.
(EP.3-1)
(H1/C2)
- CONCERN:** GEND cannot ensure the readiness of their emergency equipment.
(EP.5-1)
(H1/C2)
- CONCERN:** GEND does not have the ability to assess the consequences for all credible emergencies.
(EP.6-1)
(H1/C1)

4.5.8 TECHNICAL SUPPORT

- CONCERN:** There is no program to control facility modifications.
(TS.3-1)
(H3/C2)
- CONCERN:** The GEND Waste Management Program is not in compliance with DOE 5400.1, DOE 5400.3, and DOE 5820.2A (September 26, 1988).
(TS.5-1)
(H3/C1)
- CONCERN:** GEND has not established a single point contact for packaging and transportation functions.
(TS.6-1)
(H3/C2)
- CONCERN:** The GEND quality assurance audits and internal appraisal programs do not meet all the requirements of DOE 5700.6B, DOE 5480.3, DOE 5482.1B, and AL 5480.3.
(TS.6-2)
(H3/C1)
- CONCERN:** GEND policies and procedures for handling, packaging, and shipping hazardous materials, substances, and wastes do not meet all requirements of DOE 5480.1A, DOE 5480.3, DOE 5480.4, DOE 1540.1, and DOE 1540.2.
(TS.6-3)
(H3/C1)
- CONCERN:** The handling, storage, and intrasite movements of hazardous materials, substances, and wastes (including hazardous, mixed, and radioactive) do not meet all of the health, safety and environmental protection requirements of DOE 5480.1A.
(TS.6-4)
(H2/C1)
- CONCERN:** Preparation for response to onsite transportation incidents involving hazardous materials does not meet all the safety requirements of DOE 5480.1A.
(TS.6-5)
(H2/C1)
- CONCERN:** Preparation for response to offsite transportation incidents involving DOE cargos does not meet the requirements of DOE 1540.1. It also does not meet the requirements of DOE 5480.3 (49 CFR 172.600, which will be effective on June 4, 1990).
(TS.6-6)
(H1/C1)
CAT II
- CONCERN:** The GEND spill prevention, control, and countermeasures program does not meet all the requirements of DOE 5480.4 and 40 CFR 112.
(TS.6-7)
(H3/C1)

4.5.10 SITE/FACILITY SAFETY REVIEW

CONCERN: The internal safety appraisal function provided by the GEND Department Safety Committee has not been proactive or independent of line responsibility, is not functioning, and is not in compliance with DOE 5482.1B, Section 9.d.
(FR.1-1)
(H2/C1)

CONCERN: Triennial appraisals of the GEND safety review system are not being conducted, as required, to comply with DOE 5482.1B, Section 9.d.
(FR.5-1)
(H2/C1)

4.5.11 RADIOLOGICAL PROTECTION

CONCERN: The Environmental Chemistry Laboratory is not meeting existing or projected program requirements.
(RP.1-1)
(H2/C2)

CONCERN: Radiological postings are not being accomplished in accordance with DOE 5480.11 and GEND procedures.
(RP.3-1)
(H2/C1)

CONCERN: The Radiation Protection Program for the operation and use of X-ray machines and the accelerator lacks formality and does not comply with generally accepted standards.
(RP.3-2)
(H2/C1)

CONCERN: Radiological work procedures are not being complied with.
(RP.3-3)
(H2/C2)

CONCERN: The personnel dosimetry program at GEND does not ensure personnel radiation exposures are accurately determined and recorded.
(RP.5-1)
(H2/C1)

CONCERN: The internal radiation dosimetry program at GEND does not ensure that personnel radiation exposures are accurately determined and recorded.
(RP.7-1)
(H2/C2)

CONCERN: Fixed and portable radiological protection instrumentation is not being properly calibrated, used, and maintained so that measurements of radioactivity are accurately determined.
(RP.8-1)
(H2/C2)

CONCERN: The contamination control program does not ensure that workers are protected from unnecessary radiation exposure.
(RP.10-1)
(H2/C2)

4.5.12 INDUSTRIAL HYGIENE

CONCERN: Sufficient resources are not available to develop, implement, and support Industrial Hygiene Programs requirements at GEND.
(IH.1-1)
(H2/C1)

CONCERN: GEND has not effectively developed and implemented Industrial Hygiene Programs required by prescribed standards and/or recognized potential hazards.
(IH.3-1)
(H2/C1)

CONCERN: A periodic monitoring program, as required by DOE 5480.10, (IH.4-1) has not been implemented to assure the effectiveness of (H2/C1) controls for nonradiological chemical and/or physical stresses.

CONCERN: Industrial Hygiene data are not readily retrievable, analyzed (IH.4-2) for trends, or routinely utilized to support hazard (H2/C1) surveillance programs.

CONCERN: GEND is not in compliance with DOE-prescribed occupational (IH.5-1) health standards. (H2/C1)

CONCERN: GEND has not effectively implemented a Health Hazard (IH.6-1) Communication Program as required by DOE 5480.10 and 29 CFR (H2/C1) 1910.1200.

4.5.13 OCCUPATIONAL SAFETY

CONCERN: Line management is not implementing the occupational safety (OS.1-1) program requirements in accordance with GEND policy. (H2/C2)

CONCERN: Programs for identification and evaluation of potential safety and (OS.3-1) health concerns at the Pinellas Plant have not been adequately (H2/C2) developed or implemented.

CONCERN: Accident investigation and follow-up at the Pinellas Plant are (OS.4-1) inadequate to ensure identification of probable cause and judgment (H2/C2) of needs to prevent recurrence of similar accidents.

CONCERN: Analyses, and/or communications to management, of accident and (OS.4-2) injury data have been inadequate to evaluate performance and (H2/C2) identify trends and potential problem areas.

CONCERN: The GEND Safety Surveillance Program at the Pinellas Plant (OS.4-3) is not adequate in frequency, scope, or documentation (H2/C1) to ensure measurement and control of safety performance.

CONCERN: The AL surveillance program at the Pinellas Plant does not provide (OS.4-4) GEND management clear guidance regarding safety and health (H2/C2) program performance, nor does it accurately measure GEND performance results.

CONCERN: The Pinellas Plant does not comply with all DOE-prescribed (OS.5-1) Occupational Safety Standards. (H1/C1)
CAT II

4.5.14 FIRE PROTECTION

CONCERN: Policy and technical program requirements have not been (FP.1-1) fully established to ensure the effective implementation and (H2/C1) control of the overall fire protection program as required by DOE 5480.7.

- CONCERN:** Formal program requirements and implementation strategies have not been established to ensure compliance with NFPA 101 "Life Safety Code" requirements.
(FP.2-1)
(H1/C1)
CAT II
- CONCERN:** The potential threat to the public as the result of an onsite fire causing the release of hazardous materials has not been assessed as required by DOE 5480.7, "Improved Risk" criteria.
(FP.3-1)
(H2/C1)
- CONCERN:** Means have not been provided for controlling liquid run-offs from a credible fire to ensure containment of potential contaminants.
(FP.3-2)
(H2/C2)
- CONCERN:** Production programs have not been assessed to identify their potential vulnerabilities to delays and to other impacts that would result from a credible fire, as required by DOE 5480.7.
(FP.4-1)
(H2/C1)
- CONCERN:** The offsite fire department and plant fire brigade cannot ensure the prompt termination of the effects of a fire in a safe and effective manner, due to a less-than-required level of training, participation with simulated drills, prefire planning, and facility tours.
(FP.6-1)
(H2/C1)
- CONCERN:** An internal fire protection survey and appraisal program is not in place to assess risks, programmatic interruption potential, and the adequacy of fire control devices to qualify for the "improved risk" level of fire protection, as required by DOE 5480.7.
(FP.7-1)
(H2/C1)
- CONCERN:** Fire protection features to assure the safe use of flammable materials are not being utilized in accordance with an "improved risk" level of protection as required by DOE 5480.7.
(FP.7-2)
(H2/C1)

4.5.15 MEDICAL SERVICES

- CONCERN:** Medical records are not protected against environmental damage from fire, water, humidity, or excess temperature.
(MS.1-1)
(H2/C2)
- CONCERN:** GEND does not have documented procedures that will ensure effective assessment of the medical/physical fitness for duty as related to the specific job duties, responsibilities, and stresses for subcontract employees and GEND employees with known medical problems.
(MS.2-1)
(H2/C2)
- CONCERN:** The size of the medical staff is not sufficient for the work load.
(MS.3-1)
(H2/C2)
- CONCERN:** Privacy and space are not sufficient for required medical services.
(MS.3-2)
(H2/C2)

4.9 Team Composition and Areas of Responsibility, Tiger Team Compliance Assessment - Safety and Health, Pinellas Plant

<u>Area of Responsibility</u>	<u>Name/Organization</u>
Senior EH Manager	James P. Knight Office of Safety Appraisals Department of Energy
Team Leader	Fredric D. Anderson Office of Safety Appraisals Department of Energy
Assistant Team Leader	Albert D. Morrongiello Office of Safety Appraisals Department of Energy
Organization and Administration	Lorin C Brinkerhoff Private Consultant
Quality Verification	Charles Grua Office of Quality Programs Department of Energy
Operations Auxiliary Systems	Thomas Van Witbeck TOMA Enterprises
Maintenance	Ernest W. Johnson Private Consultant
Training and Certification Emergency Preparedness	Robert W. Tayloe, Jr. Battelle
Technical Support	John M. Cece Menehune Marine Services, Ltd.
Security/Safety Interface Site/Facility Safety Review	William J. Zielenbach Battelle
Radiological Protection	Wilbert G. Zurliene General Dynamics Services Co.
Industrial Hygiene	Robert D. Gilmore Environmental Health Sciences, Inc.
Occupational Safety	Timothy J. Mulligan Mountain State Energy, Inc.
Fire Protection	Richard J. Kobelski Westinghouse Hanford Company

Area of Responsibility

Medical Services

Name/Organization

George A. Poda, M.D.
Private Consultant

Report Support, Observers and Liaison

Appraisal Specialists

Mary Meadows
Office of Safety Appraisals
Department of Energy

Patricia Davidson
Office of Safety Appraisals
Department of Energy

Appraisal Coordinators
in Training

Nancy Sanderson
EG&G
Rocky Flats Plant

Lydia Reyes
WINCO

Report Technical Manager

Leon H. Meyer
The LHM Corporation

AL Safety Liaison

James Hines
Albuquerque Operations Office
Department of Energy

DP Program Liaison

Abdul Dasti
Weapons Safety and Operations
Department of Energy

PAO Safety Liaison

Colette Broussard
Pinellas Area Office
Department of Energy

5.0 MANAGEMENT ASSESSMENT

5.1 Purpose

The purpose of the Management review was to assess the organization, management systems, and activities of the Operating Contractor, General Electric Neutron Devices (GEND), and the Pinellas Area Office (PAO) as they relate to the operations of the Pinellas Plant as well as the Albuquerque Operations Office and DOE Headquarters. The objective was to provide an accurate assessment of the state of DOE and contractor ES&H management programs; identify areas where improvement is needed, including probable root causes; and highlight particularly noteworthy efforts that could benefit other parts of the DOE complex.

5.2 Scope/Approach

The Management Subteam sampled DOE and GEND management practices to ensure technically sound, safe, and environmentally acceptable operations are conducted at the Pinellas Plant. The assessment was conducted in accordance with the Draft Team Guidance Manual, September 1989, and the judgement of the team members. In addition, close coordination with the Environment, and Safety and Health Subteams was maintained to assist in identifying areas to be investigated. The Management Subteam identified a range of topics for review, including the following:

- o Organization Missions and Goals, including ES&H policy and priority,
- o ES&H Oversight, including assessments and evaluations,
- o Directive Process, including communication,
- o Incident Reporting and Trend Analysis,
- o Award Fee Process,
- o DOE/Contractor Organization and Capabilities, including structure, staffing, and training,
- o DOE Headquarters Responsibilities,
- o DOE Operations/Area Office Responsibilities,
- o Contractor Responsibilities, and
- o Contractor Corporate Responsibilities.

Documentation on the above topics was provided by AL, PAO, and GEND. Questions were generated for each subject area and used to focus discussions with DOE and GEND personnel. Throughout the assessment, efforts were made to validate understandings through follow-up discussions with personnel and additional document review and discussions with other members of the Tiger Team. In addition to onsite activities, discussions were held with personnel from the Office of Defense Programs, Albuquerque Operations Office, and General Electric Corporation.

5.3 Management Assessment Summary

Management Findings address broad issues that either were not addressed by the Environment Subteam or the Safety and Health Subteam, or that spanned both areas. In particular, separate Management Findings were not developed where a finding in either the environment or safety and health areas fully addressed a management weakness. The findings were grouped into the major categories identified in the Admiral Watkins' memorandum "Preliminary Review of Trends in Tiger Team Assessments," January 26, 1990.

The Management Subteam identified 16 findings during its review. The findings were grouped in the major categories identified in the Secretarial memorandum, "Preliminary Review of Trends in Tiger Team Assessment," January 26, 1990. (Table 5.1, Findings of the Management Assessment) None of these findings were significant enough to cause an interruption of any Pinellas Plant activities.

Eleven findings relate to Best Management Practices (BMP) and five findings involve Compliance. Most of the findings were previously recognized by GEND and PAO and in most cases some actions were already underway or planned to remedy the situations. The Management Subteam identified one noteworthy practice associated with a GE Corporate ES&H self-appraisal and planning program that might benefit other DOE operations. One BMP finding was identified as a special issue: the decision-making associated with the Partnership School.

Table 5.1 Management Assessment Findings

MANAGEMENT AND OVERSIGHT OF ES&H ACTIVITIES

- MGMT.4 Accomplishment of GEND's ES&H goals is being adversely affected by lack of understanding of existing policies and procedures by line supervisors. (BMP)
- MGMT.5 GEND has not documented the duties, responsibilities, authorities, and interfaces of many of its various organizational units. (BMP)
- MGMT.6 Position descriptions and performance appraisal plans for many key positions do not reflect the growing importance of achieving ES&H objectives. (BMP)
- MGMT.8 Systems used by GEND to monitor and track ES&H performance provide inadequate assurance that required improvements will materialize. (BMP)
- MGMT.9 SEN-7 Reports submitted by PAO are incomplete and inaccurate, and not prepared in accordance with guidance from Headquarters and the Albuquerque Operations Office. (Compliance)
- MGMT.12 The roles and responsibilities of the Pinellas Area Office Operations Branch and the ES&H staff are not defined and understood, nor are the interfaces. (BMP)
- MGMT.13 The Office of Defense Programs oversight of ES&H activities at the Pinellas Plant is insufficient. (BMP)
- MGMT.14 AL, DP, and Headquarters EH have failed to follow up and track actions taken or planned in response to environmental survey findings. (Compliance)

CONDUCT OF OPERATIONS/FORMALITY AND DISCIPLINE

- MGMT.11 The unplanned event reporting requirements of DOE 5000.3 are not being met and there is no ES&H lessons learned program. (Compliance)
- MGMT.15 Not all environmental and safety assessments required by DOE Orders and other regulatory requirements are being performed. (Compliance)
- MGMT.16 Decision-making associated with the Partnership School exhibits inadequately supported judgments about safety. (BMP/Special Issue)

COMMUNICATION OF ES&H POLICY

- MGMT.1 The Pinellas Area Office does not transmit DOE and AL Orders/Directives to GEND in a way that makes it clear which Orders/Directives GEND is expected to implement. (Compliance)
- MGMT.2 Policies and procedures are not kept current to ensure that plant operations are conducted in compliance with applicable orders and regulations. (BMP)
- MGMT.3 GEND has not developed a comprehensive set of ES&H goals and objectives for each organizational entity. (BMP)
- MGMT.10 The DOE appraisal system, particularly the Cost Plus Award Fee (CPAF) system as applied to the GEND contract, is being ineffectively utilized to accomplish DOE's ES&H goals. (BMP)

RESOURCES/TRAINING

- MGMT.7 The staff resources currently available at GEND and PAO are insufficient to assure that ES&H requirements will be satisfied. (BMP)

5.4 Management Assessment Findings

The Management Subteam classified each of its findings into one of the three general categories, specified in the Draft Team Guidance Manual, September 1989, i.e., Compliance Findings, Best Management Practice (BMP) Findings, and Noteworthy Practices. Compliance findings are conditions which, in the judgement of the team, do not satisfy applicable environmental regulations, applicable DOE Orders (including internal DOE memoranda, where referenced), consent or court orders, agreements with regulatory agencies, or permit conditions. BMP findings are conditions where, in the judgment of the assessment team, best management practices could and should be employed. Noteworthy practices are those practices, activities or programs that have general application to DOE facilities and are so exceptional that they warrant documentation for the purposes of information transfer among DOE facilities.

PERFORMANCE OBJECTIVE: The contract between DOE and GEND requires the Contractor to comply with those DOE and AL Orders applicable to cost reimbursement contractors which may be implemented by written direction from the Contracting Officer.

FINDING: The Pinellas Area Office does not transmit DOE and AL Orders/
(MGMT.1) Directives to GEND in a way that makes it clear which
Orders/Directives GEND is expected to implement. (Compliance)

DISCUSSION: The Statement of Work of the contract between GEND and DOE for management and operation of the Pinellas Plant (Contract DE-AC04-76DP00656) indicates that "The Contractor shall comply with those DOE and AL Orders applicable to cost reimbursement contractors which may be implemented by written direction from the Contracting Officer."

The PAO Administrative Branch receives eight copies of DOE and AL Orders/Directives from AL. A standard distribution is established for these copies, with three copies for PAO and the other five copies sent to the GEND Technical Information Center. On an uneven basis, the responsible PAO individual transmits specific ES&H requirements/instructions to the responsible GEND individual via a PAO memorandum. A review of a sample of these transmittal memoranda for ES&H orders/directives/guidance indicated that the language used was inconsistent (e.g., "for your information and use," "for your information," "for your information and action"). PAO ES&H Staff indicated that these memoranda were used on an exception basis to convey special information that was to be brought to the responsible individual's attention at GEND, and not as a mechanism for establishing whether the Order/Directive was considered applicable to the Pinellas Plant. GEND has not generally provided an official response to PAO concerning the applicability of these Orders to the Pinellas Plant except to provide impact assessments (cost and schedule determinations) when Draft Orders are issued by HQ for review and comment. Neither GEND nor PAO maintain a comprehensive listing of those Orders that the Pinellas Plant is expected to implement.

The Management Subteam is concerned that PAO is primarily serving as a conduit for information rather than fulfilling its responsibility to interpret and implement orders/directives.

PERFORMANCE OBJECTIVE: Plant activities should be conducted in accordance with approved policies and procedures that are derived from and consistent with applicable orders and regulations.

FINDING: Policies and procedures are not kept current to ensure that plant operations are conducted in compliance with applicable orders and regulations. (MGMT.2) (BMP)

DISCUSSION: Formal GEND policy and procedure documents are the General Operating Procedures (GOPs), the Environmental Health and Safety (EH&S) Manual, Manufacturing Instructions, Operating Instructions (OIs) and Quality Program Plans. The control mechanisms and level of detail of these policies and procedures are inconsistent, and they are inconsistently communicated to affected employees. The GOPs in the EH&S Manual are not automatically updated when GOPs are revised. For example GOP A.3.03, "Employee and Plant Environmental Health and Safety," was revised on January 12, 1990, but the superseded revision dated May 15, 1984, is still in Section 10 of the EH&S Manual.

There is not a plant-wide method or requirement for the updating or control of policies and procedures. As a result there are uneven document control methods among different documents and in some cases even within documents. For example, for some sections of the EH&S Manual (e.g., General Safety and Electrical Safety) the tables of contents do not indicate the revision date of the Standards. Thus there is no straightforward way for users of the Manual to know whether they are working with the current version of the Standard. In contrast, the Radiological Safety Section of the EH&S Manual does include a "last revision date" heading with the table of contents. A deficiency noted by the team was that for Standards 5.2 and 5.3 in this section the most recent copies of these Standards were not included in any of the EH&S Manual copies checked in the plant. Discussions with EH&S personnel also indicated a difficulty in getting some holders of copies of the EH&S Manual to acknowledge receipt of revisions of the Manual. GEND has efforts planned as part of the Pinellas Plant Environmental, Safety, and Health Self Assessment and Long Range Improvement Plan to reformat and reorganize all current administrative policies, procedures, standards and instructions and to implement hierarchal documents and cross reference systems. These activities are scheduled for completion by September 1991.

The EH&S Manual provides guidance and requirements on dealing with specific workplace hazards and environmental protection. It does not, however, address EH&S organizational policies or assignments of responsibility in carrying out the GEND EH&S program except through incorporation of relevant GOPs, which provide broad areas of responsibility, but few specifics. GOPs A.1.05 "Program/Project Management Policy," A.1.06 "Product Teams," A.1.07 "Capital Funds Planning," A.4.05 "Process Development Program Administration," C.3.01 "Producibility Assessment," J.1.02 "Initiation, Control and Evaluation of Engineering Notices and Runs," all cover important aspects of the GEND mission. In none of the above GOP's is the role or responsibility for ES&H

activities treated. Currently, the only requirement for ES&H review occurs when procurement, space or movement of equipment is involved. Therefore, ES&H concerns are not required to be factored into activities at an early stage of the development of a process or product.

Examples of Concerns of the Safety and Health Subteam that also support this Finding are: operating procedures (OP.3-1), fire protection program policies (FP.1-1), emergency preparedness (EP.2-3), training programs (TC.1-1), preventive maintenance instructions (MA.6-1), and packaging and transportation (TS.6-3).

Examples of findings of the Environment Subteam that also support this Finding are: tritium releases procedures (A/CF-2), environmental monitoring procedures (SW/CF-5), dose assessment methods (R/CF-5), and NEPA documentation (NEPA/CF-1).

PERFORMANCE OBJECTIVE: To accomplish GEND's ES&H mission and assure line management ownership, goals and objectives for all levels of the organization should be developed.

FINDING: GEND has not developed a set of ES&H goals and objectives (MGMT.3) objectives for each organizational entity. (BMP)

DISCUSSION: One of management's planning responsibilities is to establish goals and objectives for accomplishing its ES&H mission. GEND business goals for 1989 addressed ES&H in general terms, with the Plant Services Section (of which the EH&SP organization was part until October 1989) having more specific goals. ES&H goals were not generally established in line organizations, nor at organizational levels below the Section level (which reports directly to the General Manager). The GEND General Manager, in an all hands memo dated October 30, 1989, unequivocally made safety the number one priority of the organization. This statement is stronger and clearer than the policy statement contained in GOP A.3.03, "Employee and Plant Environmental Health and Safety," which was revised on January 12, 1990. Revised GOP A.3.03 includes the requirement to develop goals and objectives for all line organizations.

The "Pinellas Plant Environmental, Safety and Health Self Assessment and Long Range Improvement Plan," January 15, 1990, has a target completion date of February 1990 for establishment of 1990 goals and objectives for all organizational units. However, no additional goals and objectives subordinate to this general goal and associated with each organizational unit have as yet been developed. Furthermore, personnel responsible for generating these goals and objectives are unsure as to how to proceed. GEND had developed a substantial array of production and quality related goals and objectives. Trended performance against these measurable goals and objectives is conspicuously posted in most work areas, so that employees can know and measure their performance against the organization's established production/quality goals. No similar process has been established to enhance employees' ownership of such ES&H goals and objectives as: reduction in accident rates, exposures, maintenance backlog, as built drawing backlog, procedure revisions; or the goals and objectives contained in the ES&H Long Range Improvement Plan. Interviews at all levels of the organization, did confirm that management's "safety first" policy is understood by all personnel, but translation of this into specific activities is lacking.

Additional information supporting the general lack of goals and objectives can be found in Safety and Health Subteam Concern OS.3-1 and specifically with regard to a lack of maintenance goals in Concern MA.1-1.

PERFORMANCE OBJECTIVE: Facility management objectives should ensure commitment to safe operation, including enforcement of approved work practices and procedures.

FINDING: Accomplishment of GEND's ES&H goals is being adversely affected (MGMT.4) by lack of understanding of existing policies and procedures by line supervisors. (BMP)

DISCUSSION: Interviews with Section Heads and their subordinate supervisors, generally indicated a limited understanding of the ES&H requirements for their own and supporting organizations. They were not familiar with what actions were required, by whom, and in what form, although they all stated that they had line responsibility for, and ownership of, ES&H activities. They generally believed that ES&H reviews were required by the GOPs prior to initiating of a new process or program. When the Management Subteam reviewed specific activities with these supervisors regarding implementation of these responsibilities, it was found that no GOP required prior review and that, in fact, in most cases they were mistaken as to the actual performance of any such reviews.

There were other instances, such as those contained in Concern OS.1-1 of the Safety and Health Subteam, where GEND line personnel did not exercise their responsibility for safety matters but instead deferred to ES&HP to resolve construction safety issues. The Environment Subteam's Findings SW/BMPF-7, dealing with adherence to Kanne Chamber calibration procedures, and SW/BMPF-7, dealing with the availability of Spill Prevention Control procedures, also support this finding.

PERFORMANCE OBJECTIVE: Management should organize and manage the plant's work, programs, and resources so that safety and health are an integral part of the personnel duties, and requirements are consistently implemented.

FINDING: GEND has not documented the duties, responsibilities, authorities, (MGMT.5) and interfaces of many of its various organizational units. (BMP)

DISCUSSION: The existing Functional Organization Manual (1987) does not reflect the current organization, particularly with regard to the changes affecting ES&H. The existing document contains mission statements for each organizational unit. It does not contain the authorities, responsibilities and interfaces with other organizational units needed to accomplish these missions. The General Operating Procedures (GOPs) provide policy and procedures that describe how specific activities within GEND will be accomplished, but do not include responsibilities, authorities and interfaces for accomplishing the policy.

Safety and Health Subteam Concern OA.1-2 directly supports this finding while Concern OA.2-1 discusses EH&SP's conflicting line and independent safety oversight roles. Concern QV.1-2 cites issues resulting from the Environmental Chemistry Laboratory chain of control of samples and that changes to procedures are being made without review by affected GEND organizational units. Concern TS.3-1 discusses the informal nature of facility modification reviews and the EH&SP "green sticker" program. Environment Subteam finding NEPA/CF-1 regarding assignment of NEPA responsibilities also supports this finding.

PERFORMANCE OBJECTIVE: Responsibilities and authority for each management, supervisory and professional position are well defined through written position descriptions. Performance appraisals are effectively used to enhance individual performance.

FINDING: Position descriptions and performance appraisal plans for many key positions do not reflect the growing importance of achieving ES&H objectives. (BMP)
(MGMT.6)

DISCUSSION: Current, well documented position descriptions and appraisal plans are an essential tool for communicating objectives and expectations to those who are responsible for achieving them. The Team reviewed those documents for several positions within PAO and GEND, including those having significant responsibility and authority for ES&H.

There are many instances where position descriptions and appraisal plans address ES&H only in general terms and contain no readily measurable indicators of performance. Examples include the following:

- o The position description for the PAO Manager contains two qualitative references to ES&H, including to ensure "compliance with all applicable DOE policies, directives, and federal, state, and local laws," and to "carry out an effective ES&H program." The 1990 performance appraisal plan for that position contains no reference to ES&H or measurable standards. A similar situation exists for the Chief, Operations Branch. In that case, neither the position description nor the performance plan have been revised to reflect that position's enhanced line management responsibility for ES&H.
- o Position descriptions for other key positions in PAO (Safety and Occupational Health Manager; Chief, Quality Assurance and Safety Branch; and Safety Engineer) contain extensive references to ES&H responsibilities, mostly related to assuring that GEND satisfies DOE requirements. However, neither the position descriptions nor their associated performance appraisal plans for 1990 contain any measurable standards. In addition, they do not reflect the revised roles resulting from implementation of the Operational Surety Program.
- o In the position descriptions and performance appraisal plans for key managers in GEND (General Manager; Manager, Engineering; Manager, Programs; Manager, Manufacturing), ES&H objectives are mostly generic and not readily measurable. There has been an increase in emphasis on ES&H reflected in the performance objectives for 1990 versus 1989. Achievement of ES&H objectives is a factor in

awarding incentive compensation to qualifying managers. GEND's long range improvement plan contains a Safety Assurance Initiative (2.1) to address this matter for all levels of staff in 1990.

A Concern of the Safety and Health Subteam on GEND's position guides (OA.1-1) also supports this finding.

The Management Subteam is concerned about this situation because it suggests that PAO and GEND are having difficulty implementing DOE's intent and developing appropriate performance standards. It also suggests that managers have been less than fully successful thus far in translating DOE's ES&H objectives into specific, measurable actions which can be readily understood and taken by staff reporting to them.

PERFORMANCE OBJECTIVE: Sufficient resources are established and allocated to implement ES&H programs properly and to provide necessary oversight.

FINDING: The staff resources currently available at GEND and PAO are insufficient to assure that ES&H requirements will be satisfied.
(MGMT.7) (BMP)

DISCUSSION: GEND and PAO have vacancies in several key positions related to ES&H. Both organizations are actively recruiting to fill these and subsidiary positions.

PAO has documented its need for additional personnel in memoranda to AL (PAO Area Manager to Assistant Manager, Management and Administration, AL, PAO:EEP:ADM2009, July 31, 1989; and PAO Area Manager to Director, PIRD/AL, PAO:GLD:ADM043, December 8, 1989). PAO has also proposed the creation of a new Environmental, Safety and Health Branch. AL has incorporated PAO's requests into AL's requests to HQ (Manager, AL to Assistant Secretary for Management and Administration, MA-1, HQ, October 23, 1989) for increases in its authorized staff levels for 1991.

In January 1990, PAO posted vacancy announcements for several ES&H positions. The key position is Chief of the new ES&H Branch. Requests for Personnel Action have also been processed for at least two other technical specialists. There are no applicants yet for these positions. PAO has moved from its traditional practice of sequential posting (PAO-wide, then AL-wide, then DOE-wide, then outside DOE) to a parallel posting in order to get a larger pool of qualified applicants sooner.

GEND's ES&H Long Range Improvement Plan includes more than 40 specific actions to be completed by its Manager, EH&S in 1990. That position is filled now by an Acting Manager while GEND recruits a permanent replacement. In addition GEND has approved the distinctly separate position of Environment, Safety and Health Program Manager, for which the Improvement Plan indicates a dozen significant actions in the same time frame. GEND has developed a concept of the new position and has identified at least one candidate to fill it. GEND has also processed Requests for Exempt Personnel and has placed recruiting advertisements GE-wide and in national journals for several additional technical ES&H specialists.

The increasing emphasis on ES&H significantly increases the demand for qualified staff. Examples of increasing workload involve new Safety Analysis Reports, a larger fraction of hazardous wastes which must be controlled, improved document control systems, enhanced environmental monitoring, and additional health monitoring of staff. Although GEND has acted to allocate more resources to ES&H activities, some GEND technical staff expressed the opinion that GEND management has been in some instances unsympathetic to requests for additional resources to accommodate the increasing workload. GEND management responds that practical

limitations on available resources force compromises which are not always satisfactory to everyone.

Concerns of the Safety and Health Subteam which support this finding include those relating to training (TC.1-1), workload in environmental chemistry (RP.1-1), industrial hygiene (IH.1-1), occupational safety hazards (OS.3-1), and medical services (MS.3-1). A similar mismatch of workload and resources is indicated by many of the Environment Subteam's Findings.

The Management Subteam is concerned that despite planned increases in staff and active recruitment efforts, the noted shortage of experienced staff, particularly in leadership positions, jeopardizes the timely implementation of plans for improving ES&H. These concerns are rooted in the stiff competition currently being exhibited for the limited number of highly qualified ES&H expertise both within the DOE weapons complex and with private industry. (Note: GEND's departing Manager, EH&S, accepted a similar position at the Rocky Flats Plant.) The need for employees to acquire appropriate security clearances lengthens the process.

PERFORMANCE OBJECTIVE: Ensure compliance with all ES&H regulations through standardization of requirements, appropriate documentation, formality of operations, and operational monitoring and follow-up. (Extracted from Operational Surety Program Strategic Plan, DOE/AL, August 1989)

FINDING: Systems used by GEND to monitor and track ES&H performance (MGMT.8) provide inadequate assurance that required improvements will materialize. (BMP)

DISCUSSION: GEND and PAO have some systematic mechanisms for tracking the ES&H performance of the plant and for tracking commitments and plans to improve that performance. However, some shortcomings were noted, as illustrated by the following:

- o GEND collects data required by DOE, EPA, OSHA and other regulatory authorities. To date no systems exist for presenting these data in forms useful for spotting trends or for making objective, quantitative assessments about the plant's performance. Such trending of data related to parts production and parts quality is commonly posted in all production areas. GEND has initiated an effort (Safety Assurance Initiative 2.2) to develop several potential performance measures and incorporate them into a new module of GEND's Department Management Information System.
- o The "Pinellas Plant Environmental, Safety and Health Self Assessment and Long Range Improvement Plan," January 15, 1990, includes a target completion date of June 1990 for GEND to develop a program of performance indicators based upon department goals and objectives. On November 10, 1989, GEND sent to PAO the first monthly Pinellas Plant performance indicator report and a commitment to provide subsequent reports by the tenth day of each month. This report presents accident and injury data for inclusion in DOE-wide statistics. The subsequent monthly report, dated December 8, 1989, provided data on the same indicators and a commitment to add four indicators in the January 1990 report related to airborne releases of tritium and Kr-85, radiation exposures, and POTW permit excursions. GEND has not yet released this report. GEND personnel responsible for developing and implementing ES&H performance indicators for the Pinellas Plant are unsure on how to proceed further with this program. They have obtained performance indicators from other AL contractors and are studying those for applicability to Pinellas. However, they have determined that these indicators are usually specific to the processes and facilities for which they have been developed.
- o The ES&H Self Assessment and Long Range Improvement Plan presents actions approved by the GEND General Manager. Most of the individual Safety Assurance Initiatives described therein have assigned to them a responsible person to lead the effort and a well documented approach toward closure. Of concern, however, was a general observation that many actions are assigned to personnel who are acting in their

positions or who have not yet been identified. This raises concern that absent a more structured system for tracking the progress of these initiatives, some important ones will be neglected and others might be performed inefficiently.

- o A study commissioned by GEND (Safety Systems Management Assay, Tenera L.P., no date, approximately September 1989) concluded that many findings of past appraisals either remained unresolved or had been closed out inappropriately.
- o The General Electric Corporation provides to the managers of all its sites the PULSE system, a tool for developing "a measurement baseline to utilize in appraising their safety programs and practices." GEND applied the industrial safety module of PULSE to the Pinellas Plant in August 1987. Findings from that appraisal remain open today. Some others have been designated as being closed out while outstanding actions remain to be taken.

Other sections of this report which support this finding include the Safety and Health Subteam's Concerns related to follow-up on corrective actions (OA.2-2), quality program plans (QV.1-2), technical support audit/appraisals (TS.6-2), monitoring industrial hygiene (IH.4-1 and IH.4-2), and feedback from operational incidents (OS.4-2); and the Environment Subteam's findings on groundwater monitoring (CW/CF-3), ALARA reporting and tracking (R/BMPF-1), NEPA documentation (NEPA/CF-2) and environmental monitoring/sampling (EMS/CF-3).

These situations generate concern that even well conceived intentions and plans for improving ES&H may suffer from a lack of formal, well documented systems for tracking performance and accountability.

PERFORMANCE OBJECTIVE: Secretary of Energy Notice SEN-7-89 directs that each facility listed in Attachment 1 thereof (Pinellas Plant is listed) to perform a monthly compliance review and prepare a monthly report on the status of the line organization's compliance with all environmental requirements. The Notice further states that the review and report are to be performed solely by DOE employees, and that these employees shall have the necessary skills. A directional memorandum, dated September 12, 1989, from AL to PAO summarizes an August 21, 1989 Memorandum from S-1 and EH-1 to All Departmental Elements. Both of these memoranda give detailed guidance on the compliance review and report preparation procedures.

FINDING: SEN-7 Reports submitted by PAO are incomplete and inaccurate, and (MGMT.9) not prepared in accordance with guidance from Headquarters and the Albuquerque Operations Office. (Compliance)

DISCUSSION: The Environment Subteam has identified 15 compliance-related findings of which personnel at the Pinellas Plant were aware, but which do not appear, or are inaccurately characterized in the SEN-7 reports submitted to date. Four of these, listed below, are key findings in the Tiger Team's environmental assessment:

- o Lack of state air permits,
- o Groundwater contamination above State standards,
- o Purposely mixing radioactive waste with non-radioactive waste, and
- o Lack of adequate information to implement a complete remedial action.

Another finding involves failure to plan or budget to meet three requirements of DOE 5400.1. The December 1989 SEN-7 report in Table 2, Section 2.10, lists two of these requirements as "budgeted."

The S-1/EH-1 August 21, 1989 Memorandum and the September 12, 1989 AL Memorandum direct that each SEN-7 report address the adequacy of staff and financial resources to satisfy all environmental requirements. The September and October reports prepared by PAO do not contain any discussion of resources. The November and December reports mention staffing shortfall in the Area Office, but make no mention of GEND shortages. Throughout the Tiger Team Assessment, however, the Tiger Team, PAO, and GEND have consistently identified insufficient resources as a major factor in not meeting compliance requirements.

The SEN-7 Notice specifies that the review and report preparation is to be performed solely by DOE employees. At least two of the PAO SEN-7 reports were prepared to some extent by GEND employees.

The PAO Manager has assigned preparation of the SEN-7 report to PAO Operations Branch. However, the Operations Branch does not currently include any personnel trained specifically in ES&H. The ES&H staff does contain knowledgeable personnel, but there has

been insufficient coordination within the PAO to assure the optimal use of PAO resources in preparing the report. (See Management Finding MGMT.12.)

The Management Subteam is concerned by this Finding because it suggests that PAO is failing to communicate accurately to HQ the status of environmental matters, and to implement policy as defined in SEN-7-89, which is the principal mechanism for upper DOE management to keep apprised of the environmental compliance status of all DOE facilities.

PERFORMANCE OBJECTIVE: It is Department policy to require line management to be responsible for effective Environment, Safety, and Health performance in their programs. Heads of field organizations shall appraise the programs, projects, and facilities of subordinate field activities. (DOE 5480.1B)

FINDING: The DOE appraisal system, particularly the Cost Plus Award Fee (CPAF) system as applied to the GEND contract, is being ineffectively utilized to accomplish DOE's ES&H goals. (BMP)
(MGMT.10)

DISCUSSION: DOE appraisals of GEND are the principal mechanism for measuring contractor performance against DOE's ES&H expectations. These appraisals consist of the periodic functional discipline appraisals of GEND activities, such as fire protection and industrial safety; and the CPAF evaluations provided formally every six months and informally every quarter. Review of the ES&H functional discipline appraisals indicates that AL is generally well pleased with the contractor's performance. Most appraisals contain a summary statement to the effect that GEND generally meets or exceeds DOE's requirements for the discipline being reviewed. However, these appraisals generally contained findings inconsistent with that conclusion, requiring substantial corrective actions by GEND. (See AL Health Protection - Industrial Hygiene Appraisal, February 1989; Health Physics Appraisal, August 1988; Occupational Safety Appraisal, January 1988; Packaging of Hazardous Materials Safety Appraisal, March 1989.) The impression left with GEND is that its ES&H program is satisfying the expectations of DOE. This is a particularly important message to the contractor during this period of rapidly changing emphasis.

This interpretation of AL's satisfaction is reinforced by the CPAF evaluations received by the contractor every quarter. Until the current evaluation period, ES&H activities were only 10 to 15 percent of the total rating and GEND received a 90 to 95 percent ES&H rating during the past 2 years. This conveyed two messages. The first is that ES&H was not as important a concern as production to DOE and second that GEND's performance was satisfying DOE expectations.

Neither system of evaluation was being used to stimulate GEND to improve performance or to indicate changed DOE expectations. This changed dramatically in the current CPAF evaluation period when the value of ES&H performance was raised from 15 to 56 percent. However, the CPAF process, which is to provide incentive to achieve excellence, does not provide sufficiently specific ES&H goals and objectives against which performance can be measured. Criteria which AL provides to the contractor generally characterize expectations using phrases such as provide "effective management of." While this provides the reviewer the opportunity to evaluate retrospectively all aspects of the program to be "managed effectively," which is desirable, there is a need to provide additional subordinate criteria to define how the adjectival ratings will be interpreted (such as milestones to be met, reductions to be achieved, studies to be completed). PAO has implemented since October 1989 a rudimentary system for tracking

GEND's ES&H performance and is using it to make judgments associated with the CPAF process in the current evaluation period.

Another problem resulting from the CPAF process as implemented by AL is that the evaluation reports contain a substantial amount of routine, contractually required evaluatory information such as: the contractor is responsive, timely, and prepares required reports. This is included because the AL system expects the average contractor to be rated "good" or 86 percent. A small base fee is paid for the first 70 percent of the evaluation with the award fee beginning at 70 percent. Since the CPAF evaluation report is not an "exception report," the evaluators have been including statements regarding routine activities to give recognition, and thereby award fee points for this performance. The net result is a reduction of the focus and emphasis on those things that DOE is attempting to enhance. AL is currently preparing a new Handbook for use in the CPAF process. The first evaluations under this new process will be made during the coming year. A review of the draft Handbook (undated) did not indicate that the above points are being addressed.

PERFORMANCE OBJECTIVE: Unusual events should be reported to and reviewed by management for safety implications. Events are classified as unusual events in compliance with DOE 5484.1 and DOE 5000.3.

FINDING: The unplanned event reporting requirements of DOE 5000.3 are (MGMT.11) not being met and there is no ES&H lessons learned program. (Compliance)

DISCUSSION: GOP G.1.01, "Reporting Injury or Property Damage Incidents," provides requirements concerning unplanned event reporting and investigation. This GOP refers to the investigation and reporting requirements of DOE 5484.1, and provides criteria from DOE 5484.1 for the types of incidents to be reported including injury, illness, property damage, loss or theft of radioactive material, improper shipment of hazardous materials, and radiation exposures which exceed permissible limits. The reporting criteria of Section 9 of DOE 5000.3 address areas such as violation of safety limits, an unplanned event resulting in a significant program delay, a deficiency which does not permit a vital component to perform its intended function, and near misses, which are defined as events coupled with another credible event or condition which could result in a Type A or Type B occurrence as defined in DOE 5484.1. GOP G.1.01 does not address these types of incidents.

The 12 UORs reported in 1989 were either not of the type described in Section 9 of DOE 5000.3, or the characteristics addressed in these DOE 5000.3 criteria were not identified in the UOR (e.g., a vital component not performing its intended function). Another weakness of GOP G.1.01 is that line management responsibilities are limited and no individual worker responsibilities are identified. (Line managers are responsible for initiating corrective actions and disciplinary actions, and providing the Manager, ES&HP with a written report of corrective actions taken, but have no responsibility for accident investigation.) There are no responsibilities or mechanisms identified in GOP G.1.01 for providing GEND personnel with the knowledge to know what unplanned events are required to be reported. The UORs for 1989 were primarily identified through plant alarms (e.g., fire) or through safety professional's observations or reviews of written reports. There is a general absence of UORs identified by line organization managers, supervisors, or workers.

During the Appraisal, an event occurred at the Pinellas Plant that should have been reported as a UOR per the criteria of DOE 5000.3, but was not. On January 17, 1990, a Safety and Health Subteam member identified to plant personnel that the radiation warning light at the accelerator facility was incorrectly wired such that radiation could be produced even if the warning light had burned out (this feature is required by an industry standard). GEND took the accelerator out of service, but prepared no UOR. DOE 5000.3, Attachment 1, Item 11, defines a "design deficiency, construction or fabrication error found subsequently during construction, testing, modification or operation which, had it remained undetected, could have had an adverse effect on the performance,

reliability or safety of the facility" as a typical example of a reportable event.

There is no GEND program to collect information on "near miss" or lower consequence incidents, and to use this information to correct potentially hazardous conditions. There is also no structured effort to look at the lessons learned from UORs, other incidents, and inspections/appraisals and apply them to applicable plant areas/activities. Of the 12 UORs for 1989, the majority of them indicated as an "apparent cause" - procedures. Additional review indicated that in most cases there was either a lack of procedures addressing these activities, or the procedure did not address appropriate precautions/actions. Corrective actions generally were limited to correcting the deficiencies of the specific procedure, rather than evaluating whether these same deficiencies existed in other areas, or whether procedural weakness existed plant-wide.

The Safety and Health Subteam identified two additional examples of incidents where lessons learned had not been applied. One relates to back/neck related injuries, and the other to a 1977 fatality resulting from hoisting and rigging deficiencies.

PERFORMANCE OBJECTIVE: Primary accountability and responsibility for ES&H activities is to be fixed in the DOE line management at all levels (SEN-11-89, Setting The New DOE Course, September 5, 1989).

FINDING: The roles and responsibilities of the Pinellas Area Office (MGMT.12) Operations Branch and the ES&H staff are not defined and understood, nor are the interfaces. (BMP)

DISCUSSION: PAO has not reached internal agreement and documented the roles, responsibilities and interfaces of the Operations Branch and the ES&H staff. Functional descriptions of the two groups do not exist. Lack of such information has led to confusion and lack of coordination that has resulted in reduced organizational effectiveness (e.g., conduct of Operational Surety Surveys and Safety Walk Throughs, preparation of SEN-7 reports).

The Pinellas Area Office is taking steps to improve its management of ES&H activities. Previously the ES&H staff had responsibility for both implementation and oversight. An organization parallel to AL was conceptually established in December 1989. That is, the Operations Branch is to have line-management responsibility for day-to-day ES&H activities and an independent ES&H organization is to be responsible for determining compliance, conducting audits and serving as a technical resource.

The Management Subteam is concerned that the PAO organizational dysfunctions suggest that PAO is having difficulty internalizing and implementing SEN-11. In addition, a concern exists that GEND personnel may have difficulty identifying the responsible PAO organization and individuals for guidance, direction and problem resolution, and may receive conflicting information.

Management Subteam Finding MGMT.9 also supports this finding.

PERFORMANCE OBJECTIVE: Primary accountability and responsibility for ES&H activities are to be fixed in the DOE line management at all levels (SEN-11-89, Setting The New DOE Course, September 5, 1989).

FINDING: The Office of Defense Programs oversight of ES&H activities at (MGMT.13) the Pinellas Plant is insufficient. (BMP)

DISCUSSION: DOE 5400.1 requires Headquarters program personnel to participate in selected environmental appraisals, surveys and audits as described in DOE 5482.1B. ES&H oversight is conducted by the Office of Weapons Safety and Operations principally on an ad hoc, reactive basis when actions items or issues are raised (e.g., NEPA documentation review). Pinellas Plant site reviews by Headquarters staff are generally limited to infrequent attendance at "Round Robin" reviews and "courtesy" visits, which are primarily production oriented.

DOE 5480.1B requires Headquarters to confirm that DOE and Federal ES&H policies and directives are adhered to vigorously in all DOE operations. The Management Subteam found no evidence that confirmation is being performed. DOE 5481.1B requires line organization personnel to review and approve appropriate safety analyses for each DOE operation and subsequent significant modification, and to maintain an official DOE file of all pertinent documentation relating to the authorization of each DOE operation. The Management Subteam found no evidence of a proactive stance taken toward preparation of Pinellas Plant safety analysis reports. In addition, the Management Subteam was told the Pinellas Plant files are incomplete.

The Management Subteam was told that Defense Programs personnel resources assigned to ES&H have not been sufficient to carry out their responsibilities. The Management Subteam was also told that the Office of Military Applications is developing an organizational and staffing plan to address this deficiency.

PERFORMANCE OBJECTIVE: The follow-up and tracking of actions taken or planned in response to the findings of the Environmental Preliminary Surveys is required (memorandum, Assistant Secretary for Environment, Safety and Health to Operations Office Managers, April 24, 1987).

FINDING: AL, DP, and Headquarters EH have failed to follow up and track (MGMT.14) actions taken or planned in response to environmental survey findings. (Compliance)

DISCUSSION: A DOE memorandum from the Assistant Secretary for Environment, Safety and Health (EH-1) to Operations Office Managers, dated April 24, 1987, establishes the Office of Environmental Guidance and Compliance (EH-23) as responsible for the follow-up and tracking of actions taken or planned in response to the Environmental Preliminary Survey findings. A March 1, 1989 memorandum from the Deputy Assistant Secretary for Environment to multiple addresses defines specific actions to be taken.

Discussions with EH-232 staff indicated they are unsure how many Environmental Survey Preliminary Reports (which contain findings), site Action Plans, or site Action Plan Updates currently were entered into the Computer Assisted Tracking System (CATS). All Action Plans and Final Action Plans were believed to have been received from the Operations Offices, DOE-wide. In addition, since the issuance of the March 1, 1989 memorandum, EH-232 has not issued new guidance to the Operations Offices for integrated Action Plans and Action Plan Updates to address Survey findings as required. Information indicates that EH-232 is unsure that the Action Plans and Updates have been entered into CATS and that they do not ensure that regular updates are prepared.

Because of lack of EH-232 guidance to Operations Offices on the reporting schedule necessary for updating Action Plans, or the designation by EH-232 of an individual in the Operations Offices who is responsible for updating the findings on a set schedule, EH-232 has been unable to systematically follow-up and track Survey findings.

As part of the environmental assessment, the Tiger Team checked the status of the Pinellas Plants' actions to correct the findings of the 1987 Environmental Survey. Of the 36 Survey findings, 18 were determined by the Environment Subteam to currently be non-issues. The Pinellas Plant has notified AL that corrective actions are complete for 27 out of the 36 findings. Of those 27 completed actions, the Environment Subteam determined 12 to be current issues, on which Tiger Team Report findings are based. Of those 12 current issues, six represent actions which the environmental team could not certify to have actually been completed.

The other six fall into two categories. The first represents problems of a similar nature to the original Survey finding, but which are illustrated by different particular examples or locations (such as hazardous materials stored without secondary containment, but in a different location than was noted in the Survey). The second category represents Survey findings on lack of procedures. The corresponding Tiger Team findings are that procedures have been developed, but are not being followed. Table E-1 in Appendix E presents a detailed summary of the findings update.

PERFORMANCE OBJECTIVE: It is Department policy to assure compliance with applicable statutory requirements affecting Federal facilities and operations and where possible, consistent with the Department's mission and supported by appropriate cost/benefit analysis, reduce identified environment, safety, and health risks, even though not mandated by specific requirements. (DOE 5480.1B)

FINDING: Not all environmental and safety assessments required by DOE (MGMT.15) Orders and other regulatory requirements are being performed. (Compliance)

DISCUSSION: Both the Environment Subteam and the Safety and Health Subteam had multiple findings/concerns related to either the lack of or the inadequacies of assessments related to environmental impacts or public/worker health and safety. In addition, the Management Subteam also identified two findings with respect to a lack of adequate safety analyses/assessments to support management decisions.

Deficiencies identified by the Safety and Health Subteam include the following:

- o A site-wide safety assessment and subsequent SARs do not exist as required by AL 5481.1B (Concern OA.7-1).
- o A systematic assessment of credible hazards has not been incorporated into emergency plans (Concern EP.2-1).
- o The consequence of all credible emergencies has not been assessed (Concern EP.6-1).
- o Identification of potential safety and health concerns is inadequate (Concern OS.3-1).
- o Potential threat to the public of a fire involving hazardous material has not been evaluated as required by DOE 5480.7 (Concern FP.3-1).

Deficiencies identified by the Environment Subteam include the following:

- o Studies have not been carried out to determine sources that need Air Operation Permits (Finding A/CF-1).
- o The containment assessment and feasibility study for the 4.5-acre site do not provide a sufficient basis for remedial action (Finding IWS/CF-1).
- o There are technical inadequacies in the plant-wide Environmental Assessment (Finding NEPA/CF-3).

The Management Subteam also identified two areas where management decisions with respect to safety were inadequately supported by safety assessments. One was with respect to the Partnership School, which is documented in Finding MGMT.16. The other was with respect to whether the Pinellas Plant should be classified as a Nuclear Facility. This issue was being resolved among GEND, PAO and AL during the Tiger Team Assessment. The handling of this issue provided another example to the Tiger Team of a management decision on safety made without an adequate technical assessment. The details of this decision process are provided below.

DOE 5480.5 defines a "Nuclear Facility" as "a facility whose operations involve radioactive materials in such form and quantity that a significant nuclear hazard potentially exists to the employees or the general public. Included are facilities that: (1) produce, process or store radioactive liquid or solid waste, fissionable materials, or tritium; . . ." The Pinellas Plant does process tritium and does store radioactive waste.

In 1989, "An Analysis of the Hazards at DOE's Pinellas Plant" was conducted by a consultant to GEND. This is the most comprehensive assessment of Pinellas Plant radiological risks that has been conducted to date. This report concludes that "overall risks to the public from accidental radiation releases are low, relative to other DOE facilities or compared to many NRC licensees." This report further indicates that "the release of the entire inventory of tritium would pose no danger to members of the public." The limitation of this report is that it does not provide a quantitative basis for a determination of whether "a significant nuclear hazard potentially exists to the employees or the general public."

Since this report was completed, GEND, PAO and AL managers have all reached agreement that "no significant nuclear hazard potentially exists to employees or the general public" through their agreement that the Pinellas Plant is not a Nuclear Facility (memorandum from Manager, AL to General Manager, GEND, January 29, 1990). However, no additional technical basis for this determination has been developed.

5.5 Special Issue: Partnership School

A Special Issue was identified by the Management Subteam. The Partnership School was judged to be of special interest because it represents a management initiative involving somewhat unique aspects which are outside the normal scope of DOE's experience.

PERFORMANCE OBJECTIVE: Equipment, process, building, and facility operations will be governed by documentation that clearly identifies the hazards (to the general public, to plant employees, to the environment, and/or to government property) associated with its operation, and establishes operating conditions to produce an acceptable risk. Further, the operation of processes, buildings, and facilities will be understood and controlled in such a manner that operating decisions are deliberate, informed, and documented. (Extracted from Operational Surety Strategic Program Plan, DOE/AL, August 1989)

FINDING: Decision-making associated with the Partnership School exhibits (MGMT.16) inadequately supported judgments about safety.

DISCUSSION: The idea of establishing a combination school and child care center within the confines of the site boundary of the Pinellas Plant is a well-intentioned effort toward good corporate citizenship and improvements in productivity. The initiative demonstrated by GEND is noteworthy and was encouraged by many interested parties, including DOE/HQ.

The Management Subteam reviewed the decision-making attendant to the Partnership School/Center (hereafter referred to as the school) including the timing and content of information flow relative to actions taken. The review found that GEND and DOE made key decisions and took important actions associated with the school in advance of an analysis of the potential hazards (see Finding MGMT.15) which nearby plant operations may pose to the school's occupants.

Facts supporting this finding include the following:

- o The General Manager of GEND took the initiative for the Partnership School/Center upon encouragement from the Pinellas County School Board in November 1988 and from an announcement by the Secretary of Energy of planned day care centers at DOE-HQ.
- o The concept involves a preschool daycare center for infants and toddlers operated by a nonprofit corporation established by GE and a prekindergarten to second grade elementary school operated by the Pinellas County School Board. The school could accommodate up to 270 children and 33 staff. Only children of parents working at the plant are eligible. The concept would yield improvements in education and care of the children and reductions in time lost from work by parents.
- o Preliminary discussions and exchanges of memoranda in the spring of 1989 among GEND, PAO, AL, HQ/DP, and local

authorities resulted in decisions to authorize construction of the school (\$1,190,000) under the plant's General Plant Projects authorization. An environmental survey commissioned by GEND (Background Assessment Report GEND Daycare Center, Westinghouse Haztech Inc., April 13, 1989) supported a decision by GEND to construct the school in the plant's east parking lot. PAO and GEND believed they had an agreement with AL that only a brief qualitative statement of risks was required, since the perception was that plant operations posed no unusual or unacceptable risk to the school's population. Meanwhile GEND acted to poll and inform its employees of the plans.

- o On June 13, 1989, there was a joint press conference involving GEND, PAO, and the Superintendent of Schools publicly announcing plans for the school. The announcement received favorable coverage in the area's news media. A memorandum from DOE-HQ (Assistant Secretary for Management and Administration, MA-1, HQ, to Managers of all Operations Offices, July 11, 1989) cited the Pinellas initiative as an example for other DOE facilities to follow.
- o Until August 1989, the risks posed by nearby plant operations to the school's occupants had received little explicit or documented consideration from GEND and PAO. Decision makers concluded, based on a knowledge of the plant, that existing operations posed no unacceptable or unique risk. The first significant indications of the need for an in depth safety evaluation specific to the school arose in August 1989, soon after a reorganization at AL. A memorandum (Director of Safety Programs Division, AL to PAO Manager, August 10, 1989) informed the latter that information submitted to date by PAO regarding Title I design remained inadequate. AL requested PAO to prepare and submit a risk assessment complying with AL 5481.1B on safety assessments. AL's memo stated, "The risk assessment must be completed and approved before a decision can be made to move children into the school." The risk assessment was to address all nearby operations including both routine and upset conditions. Further, the location on site of a new population at risk highlighted the need for a more systematic assessment of all risks posed by the plant.
- o Construction of the school began on August 21, 1989. Its first planned occupancy was scheduled for November 1989.
- o In about the same time frame AL requested PAO (Director AL/EHD to PAO Manager, October 17, 1989) to have GEND prepare and submit a revised Action Description Memorandum addressing "whether the consequence of any plant accident has been changed by the introduction of this non-worker population."
- o A study commissioned by GEND (Safety Systems Management Assay, Tenera L.P., undated, approximately September 1989)

identified several accident scenarios involving potentially "life threatening quantities of concentrations of toxic chemicals to plant workers and (nearby) public." One scenario, a postulated release of tungsten hexafluoride from a chemical vapor deposition process in Area 353 (less than 70 meters from the school), generated attention but did not alter GEND's conclusion about acceptability of risk.

- o Responding to AL's directive, GEND prepared and PAO submitted to AL a safety assessment for the school (Chief, Quality Assurance and Safety Branch, PAO to Director, Safety Programs Division, AL, PAO:DSI:QAS031, November 23, 1989). The assessment was basically a repackaging of the study by Tenera into a format more compatible with AL 5481.1B. Supplemental material on emergency plans and doses from routine effluents was provided. The assessment concluded that routine operations and potential accidents at the plant pose acceptable risks to the school's population.
- o AL criticized the safety assessment (Safety Programs Division, AL to Safety and Occupational Health Manager, PAO, December 18, 1989) by preparing 13 pages of detailed comments pointing out specific inadequacies and expectations in the technical basis supporting the assessment's conclusions. A summary comment states "there is not enough information provided which allows the reviewers to make the conclusion that plant operations will have an acceptably low level of risk in terms of impacts on the child care center."
- o As of the dates of the Tiger Team's appraisal, construction of the school is approximately 90 percent complete. Occupancy is rescheduled for March 1990. GEND is revising its safety assessment in response to AL's comments. PAO has submitted a revised Action Description Memorandum. There is no indication that any of the new information on risk has generated any reconsideration of potentially hazardous plant operations nor has it been assimilated in any meaningful way into the Pinellas emergency plans. There is also no indication that GEND or PAO has attempted thus far to present a reassessment of the risks to parents, the school's Board of Directors, or to the County School Board.

The Management Subteam is concerned by this finding because, lacking a thorough hazard assessment, managers at Pinellas are unable to fully assess the risks posed by operations at the plant. This limits their ability to assess these risks as they pertain to the Partnership School. Given the project's involvement of children and the high visibility to which it exposes DOE, the finding also suggests that HQ and AL may want to pay particular attention to the documented justification which will accompany the upcoming decision on opening the school.

5.6 Noteworthy Practice

General Electric has established a self-appraisal and planning program for health, safety and environmental protection titled the PULSE Program. The PULSE Program has been developed as a tool to assist GE businesses and their respective managers in meeting their obligations as stated in GE company policies for health, safety and environmental protection.

The areas of appraisal addressed in PULSE include the following:

- o Industrial safety,
- o Industrial hygiene,
- o Occupational medicine, and
- o Environmental protection.

The PULSE modules contain not only fundamental questions that define legal requirements and GE-recognized practices, but also include "common sense" explanations of complex regulations and terminology. Information is provided to supplement the questions to help the appraiser understand the question or associated requirement. Also, the corresponding Federal regulations and company guidance documents are referenced by specific number and section. PULSE identifies potential liabilities and provides a mechanism for this information to be communicated to those responsible managers.

5.7 Probable Root Causes

There are at least two probable root causes for the deficiencies observed at the Pinellas Plant.

First, emphasis on production has traditionally overshadowed interest in fully complying with environment, safety and health requirements. There is a perception shared by PAO and GEND, that GEND has been for many years satisfactorily achieving DOE's expectations. This perception has been reinforced by actions by DOE, such as appraisals and award fee determinations. Expectations now are clearly changing, but GEND, PAO, AL, and DP are having some difficulty adjusting rapidly enough. Findings attributable to this root cause include: MGMT.1, MGMT.2, MGMT.3, MGMT.4, MGMT.5, MGMT.6, MGMT.7, MGMT.8, MGMT.9, MGMT.10, MGMT.11, MGMT.12, MGMT.13, and MGMT.14.

Second, there is a widespread mindset that the Pinellas Plant poses no unusual or unique risks. The surrounding high density of similar light industry has contributed to the sense that environment, safety, and health risks to the community are acceptably low. The personnel did not fully appreciate the need to quantify the risks associated with the plant's operations. Operation of the plant since 1957 gives no indication of adverse effect to the surrounding population. Findings attributable to this root cause include: MGMT.1, MGMT.8, MGMT.11, MGMT.15, and MGMT.16.

APPENDIX A

Assessment Personnel and Biographical Sketches

APPENDIX A-1

**Biographical Sketch of
Compliance Assessment Team Leader
Pinellas Plant**

NAME: Willis W. Bixby

AREA OF RESP: Tiger Team Leader

ASSOCIATION: U.S. Department of Energy - Idaho Operations Office West Valley Demonstration Project

EXPERIENCE: 18 years

- o Director, West Valley Demonstration Project
 - Responsible for day-to-day management of the West Valley (NY) Nuclear Services Company, DOE's prime contractor for the West Valley Demonstration Project. The Project encompasses all aspects of waste management including industrial, hazardous, radioactive, mixed- and high-level waste encountered in the cleanup of the nation's only commercial reprocessing plant.
- o Manager, DOE Three-Mile Island (TMI) Site Office
 - Responsible for day-to-day management of EG&G, the DOE's on-site support contractor at TMI. This office managed the Department's Technical Information and Examination Program established to 1) acquire information on the extent of damage at TMI, and 2) provide technical assistance to General Public Utilities, the TMI Owner.
- o Chief, Code Development and Semiscale Branch
 - Responsible for reactor accident analysis code development and technical assistance tasks for the Nuclear Regulatory Commission at the Idaho National Engineering Laboratory. Oversight responsibility for the Semiscale program, a non-nuclear simulator of a pressurized water reactor. This program provided experimental data to verify reactor accident analysis codes.
- o Reactor Engineer, Systems Engineering Branch, Nuclear Regulatory Commission
 - Responsible for the programmatic guidance and technical direction for the NRC's Semiscale program

EDUCATION: B.S., Chemical Engineering, University of Maryland
M.S., Nuclear Engineering, University of Maryland
Ph.D., Nuclear Engineering, University of Maryland

OTHER: Member, American Nuclear Society
Graduate, Federal Executive Institute

APPENDIX A-2

**Biographical Sketches of Team Members
Tiger Team Compliance Assessment - Environmental Subteam
Pinellas Plant**

NAME: Lee Stevens

AREA OF RESP: Environmental Team Leader

ASSOCIATION: U.S. Department of Energy Headquarters, Office of Environmental Audit

EXPERIENCE: 18 years

- o Acting Audit Team Leader (Tiger Team), Office of Environmental Audit
- o Environmental Manager, U.S. Naval Petroleum Reserves
- o Environmental Protection Specialist, Federal Prototype Oil Shale Leasing Program
- o Policy Analysis, Enforcement, U.S. Environmental Protection Agency (EPA)
- o Enforcement Engineer, Jefferson County Air Pollution Control District

EDUCATION: B.M.E., University of Louisville, J.B. Speed Scientific School

NAME: Richard A. Barringer

AREA OF RESP: National Environmental Policy Act (NEPA)

ASSOCIATION: Oak Ridge National Laboratory

EXPERIENCE: 5 years

- o Registered professional geologist involved with records review, facility inspections, staff interviewing, and evaluation of site-specific National Environmental Policy Act (NEPA) documentation to determine the degree environmental and regulatory compliance at major federal facilities for the Department of Energy (DOE).
- o Interdisciplinary team member responsible for the development of technical (NEPA) environmental documents (EAs, EISs) for the U.S. Forest Service and the Bureau of Land Management.
- o Principal preparer of preliminary environmental assessments of Department of Defense installations for the Environmental Protection Agency (EPA).
- o Team member responsible for environmental compliance and technical evaluation of RI/FS work plans for DOE Formerly Utilized Sites Remedial Action Program (FUSRAP) operations for DOE Office of NEPA Assistance.

EDUCATION: B.S., Geological Sciences, Old Dominion University, 1982
M.S., Geological Sciences, Old Dominion University, 1987
U.S.D.A. Graduate School, National Environmental Policy Act Course, Spring 1989

NAME: James P. Daniel

AREA OF RESP: National Environmental Policy Act (NEPA)

ASSOCIATION: U.S. Department of Energy

EXPERIENCE: 12 years

- o Environmental Protection Specialist with the DOE Office of NEPA Assistance. Responsible for the DOE HQ's review of Action Description Memorandum (ADM), Memorandum to File (MTF), Environmental Assessments (EA), and Environmental Impact Statements (EIS) to insure compliance with DOE regulations and orders and Council on Environmental Quality (CEQ) regulations.
- o Project Manager/Environmental Biologist at the Federal Energy Regulatory Commission for energy-related projects. Responsible for the preparation of numerous EAs and EISs by a team of multi-discipline professionals.
- o NEPA Subteam Leader for the Environmental Audit Team for the Portsmouth Gaseous Diffusion Plant.

EDUCATION: B.S., Wildlife Management, Northwestern State University of Louisiana, 1972

NAME: Mark R. Francis

AREA OF RESP: Radiation

ASSOCIATION: NUS Corporation

EXPERIENCE: 14 years

- o Environmental Team Coordinator for one of the Tiger Teams. Participated in the DOE Environmental Survey Program since 1986 and performed surveys at the Portsmouth, Paducah, and Oak Ridge Gaseous Diffusion Plants as well as the Lawrence Livermore, Sandia Livermore, Fermilab, Brookhaven, and Santa Susanna Laboratories as the radiation specialist. At five of these facilities, he served as the Team Coordinator. Additionally, he served as Team Coordinator for the West Valley Demonstration Project and Portsmouth Gaseous Diffusion Plant Environmental Tiger Team assessments.
- o More than 13 years of experience in Environmental, Safety and Health related professions. Recipient of Tiger Team specific training in radiation compliance assessment procedures, as well as root cause analysis training to help identify underlying reasons for environmental problem conditions.

EDUCATION: B.S., Environmental Resources Management, Pennsylvania State University
M.S., Occupational and Environmental Health, Wayne State University

NAME: B. R. Hughes

AREA OF RESP: Surface Water

ASSOCIATION: NUS Corporation

EXPERIENCE: 7 years

- o Surface Water/Drinking Water Technical Specialist and Tiger Team member. Served on the DOE Tiger Team Environmental Assessment where he reviewed complex chemical processes and associated waste streams for compliance with surface water regulation.
- o More than 6 years of waste water and hazardous waste experience. Activities include technical and regulatory aspects of the Safe Drinking Water Act (SDWA), the Clean Water Act (CWA), and the Resource Conservation and Recovery Act (RCRA) and Superfund Programs. Responsibilities as staff chemical engineer include evaluation of environmental statutes, regulations and standards, development and presentation of technical guidance documents and training programs and application of environmental and regulatory statutes.

EDUCATION: B.S., Chemical Engineering, Massachusetts Institute of Technology

NAME: Theodore C. Koss

AREA OF RESP: Air Quality

ASSOCIATION: NUS Corporation

EXPERIENCE: 20 years

- o Air quality Specialist for the West Valley Demonstration Project (August 1989) Tiger Team Evaluation and the Y-12 Plant Tiger Team Assessment (October 1989). Served as Air Quality Technical Specialist for the DOE Environmental Survey and participated in surveys at the Component Development Integration Facility, the Idaho National Engineering Laboratory, the Laboratory for Environmental Health Research, the Lawrence Berkeley Laboratory, and the Stanford Linear Accelerator Center.
- o Air Pollution Meteorologist/Manager experienced in air-quality impact assessment/regulatory compliance/emission inventory surveys. Supervised Model Applications Section in the Air Quality Branch of the Tennessee Valley Authority.

EDUCATION: B.S., Physics, Iona College
M.S., Meteorology (Minor in Air Resources Engineering), New York University

NAME: William M. Levitan
AREA OF RESP: Inactive Waste Sites

ASSOCIATION: NUS Corporation

EXPERIENCE: 14 years

- o Environmental Subteam Coordinator and Inactive Waste Sites Specialist for the Pantex Plant Tiger Team Assessment in October 1989. Inactive Waste Sites Specialist for the Rocky Flats Special Assignment Team in July 1989. Served as Inactive Waste Sites Specialist on DOE Environmental Survey Teams at Argonne National Laboratory, Idaho National Engineering Laboratory, Component Development and Integration Facility, Solar Energy Research Institute, National Institute for Petroleum and Energy Research, Ames Laboratory, and Princeton Plasma Physics Laboratory.
- o Environmental scientist with experience in a broad array of CERCLA-related studies including preliminary assessments, remedial investigations/feasibility studies, risk assessments, and field investigations.

EDUCATION: B.A., Natural Science, Johns Hopkins University
M.S., (Incomplete) Environmental Engineering/Engineering Management, University of Maryland
M.S., Marine Studies, University of Delaware

NAME: Mark D. Notich

AREA OF RESP: Environmental Subteam Coordinator

ASSOCIATION: NUS Corporation

EXPERIENCE: 11 years

- o Environmental Sub-team Coordinator for the Y-12 Plant Tiger Team Assessment in October, 1989. QA/TSCA Technical Specialist for the Rocky Flats Environmental Assessment in July, 1989. Participated in the Feed Material Production Center (FMPC) Tiger Team Assessment in July, 1989, as a QA/TSCA Technical Specialist. Served as QA/TSCA Technical Specialist for the DOE Environmental Survey and participated in Surveys at Argonne National Laboratory, Oak Ridge National Laboratory, Pittsburgh Energy Technology Center, Morgantown Energy Technology Center, and the Naval Petroleum Reserves in California.
- o Analytical chemist experienced in the analysis of environmental samples by various instrument methods according to EPA-CLP methods and other EPA-ASTM methods. Served as Quality Assurance Officer for an Alternate Remedial Contracting Services (ARCS) effort for EPA Region III

EDUCATION: B.S., Chemistry, University of Maryland

NAME: David G. Olson

AREA OF RESP: QA/TSCA Technical Specialist

ASSOCIATION: NUS Corporation

EXPERIENCE: 24 years

- o QA/TSCA Technical Specialist for the Kansas City Plant Tiger Team Assessment in November 1989, and the Y-12 Plant Tiger Team Assessment in October 1989. Also served as QA/TSCA Technical Specialist for the DOE Environmental Survey and participated in surveys at the Laboratory for Environmental Health Research, the Lawrence Berkeley Laboratory, and the Stanford Linear Accelerator Center.
- o Analytical chemist experienced in the analysis of environmental samples by various instrument methods according to EPA-CLP methods and other EPA-ASTM methods. Served as Laboratory Supervisor for the Emergency Environmental Response Unit (EERU) effort for EPA Region II.

EDUCATION: B.S., Chemistry, Duquesne University

NAME: Douglas J. Riddle

AREA OF RESP: Groundwater

ASSOCIATION: NUS Corporation

EXPERIENCE: 15 years

- o Registered geologist in the State of Florida. Served as the groundwater technical specialist on DOE Environmental Surveys of five DOE facilities, including: Hanford, Savannah River, Feed Materials Production Center (FMPC), Pinellas Plant and Sandia National Laboratory. Served as both the groundwater and CERCLA specialist for the DOE Environmental Survey at the Tonopah Test Range. Performed RCRA groundwater assessments of Los Alamos and Lawrence Livermore National Laboratories for DOE. Participated in the DOE Tiger Team Assessment of the FMPC as a groundwater specialist.
- o Geologist experienced in the conduct of both RI/FS and RFI studies under CERCLA and RCRA. Experienced with the design and implementation of RCRA groundwater monitoring programs. Served as project manager for technical assistance to EPA in the revision of RCRA Subpart F. Has conducted hydrogeologic/geologic investigations in 18 states.

EDUCATION: B.A., Geoscience, Montclair State University

NAME: Lorene L. Sigal, Ph.D.

AREA OF RESP: NEPA - Planning Management

ASSOCIATION: Oak Ridge National Laboratory

EXPERIENCE: 10 years

- o Preparation of terrestrial ecology sections of EISs for coal-fired, oil-fired and nuclear power plants; U.S. Army disposal of chemical agents and munitions; and U.S. Air Force base closures and reuse.
- o Technical assistance to the DOE office of NEPA Project Assistance. Development of the draft DOE NEPA Compliance Guide and the DOE NEPA Compliance Audit Protocol.
- o Preparation of the DOE Regulatory Compliance Guide for Prevention of Significant Deterioration under the Clean Air Act.
- o Team Leader for ORNL environmental compliance assessments for the U.S. Air Force under their Environmental Compliance and Management Program (ECAMP).
- o Basic research in the effects of air pollutants on vegetation.

EDUCATION: Ph.D., Botany and Microbiology, Arizona State University

NAME: Wayne W. Tolbert

AREA OF RESP: National Environmental Policy Act

ASSOCIATION: Science Applications International Corporation

EXPERIENCE: 13 years

- o SAIC Assistant Vice-President and Senior Project Manager who has managed or contributed to over 45 Environmental Impact Statements (EISs), EIS Supplements, EAs, and NEPA Adequacy reviews.
- o Extensive experience conducting peer reviews of environmental documents including 20 EISs and EAs, 300 Action Description Memoranda, Memos-to-File (MTFs), and Categorical Exclusions.
- o Senior Technical QA Reviewer for the Defense Nuclear Agency Environmental Support for Nuclear Weapons Effects Simulation effort and QA Officer for the USAF/US Army Corps of Engineers EIS Support contracts.
- o NEPA Specialist for Environmental Audit Teams for the Mound Plant, the Feed Materials Production Facility, and the Nevada Test Site.
- o SAIC Division Manager Training Development Team.
- o Authored SAIC Project Management Training course and serves on the corporate Division Manager Training Development Team.

EDUCATION: A.A., Biology, Wingate Junior College, 1968
B.S., Biology, Wake Forest University, 1970
M.S., Ecology, University of Tennessee, 1972
Ph.D., Ecology, University of Tennessee, 1976

NAME: Philip R. Winsborough

AREA OF RESP: Waste Management

ASSOCIATION: NUS Corporation

EXPERIENCE: 16 years

- o Environmental Subteam Waste Management Specialist (RCRA) for the Kansas City Plant Tiger Team Assessment in November, 1989. Served as Waste Management Specialist (RCRA) for the Feed Material Production Center (FMPC) Tiger Team Assessment in July, 1989. Served as Groundwater Specialist for the Pantex Tiger Team Assessment in September 1989.
- o Waste Management Specialist and Groundwater Specialist for the Texas Water Commission. Reviewed closure plans, remediation plans and compliance of Industrial and Federal Facilities. Waste Management and Groundwater Consultant in New Jersey and Texas, EPA Regions II and VI.

EDUCATION: B.A., Geology, University of Texas at Austin

APPENDIX A-3

**Biographical Sketches of Team Members
Tiger Team Compliance Assessment - Safety and Health Subteam
Pinellas Plant**

NAME: Fredric D. Anderson

AREA OF RESP: Team Leader

ASSOCIATION: U.S. Department of Energy Headquarters

EXPERIENCE: 36 years

- o Team Leader - Office of Safety Appraisals, DOE
- o Private Consultant - Nuclear Safety of Power/Research Reactors
 - Technical Specifications
 - Prudence Reviews for Public Utility Commission Hearings
 - Preparation and Review of Safety Analysis Reports
 - Verification and Readiness Reviews of Power Plants for Licensing
 - Emergency Planning and Rad Protection Programs
- o U.S. Nuclear Regulatory Commission
 - Senior Reactor Engineer: Technical Specifications/Westinghouse Power Plants
 - Senior Nuclear Engineer: Regulatory Requirements/Siting Policy and Practices
- o U.S. Atomic Energy Commission
 - Lead Reactor Engineer: Operating Reactor Project Leader/Radiation Physics Specialist
 - Nuclear Engineer: Special Safety Concerns for Power Reactors; SNAP/ROVER/PLUTO Safety Reviews
- o Atomics International
 - Senior Research Engineer: Manager of SNAP Reactor Safety Programs (Experimental and Analytical)
 - Research Engineer: Shield Analyst for OMR and SGR Programs (Experimental and Analytical); Waste Disposal Systems and Hot Cells Design
- o U.S. Public Health Service
 - Commissioned Officer: Radiological Health Instructor and Editor of Publications; Operation Redwing Monitoring Team Member
- o N.C. State University - Physics Instructor

EDUCATION: B.S., Math/Physics, Purdue University
M.S., Engineering Physics, N.C. State University

OTHER: Marquis' Who's Who in the East
Leaders in American Science
Dictionary of International Biographies
Sigma Pi Sigma

NAME: Albert D. Morrongiello

AREA OF RESP: Assistant Team Leader

ASSOCIATION: U.S. Department of Energy Headquarters, Office of Safety Appraisals

EXPERIENCE: 11 years

- o Nuclear Engineer: Assigned as an Assistant Team Leader in Safety Inspection Division
- o U.S. Nuclear Regulatory Commission: Assigned as Resident Inspector
- o Environmental Protection Agency

EDUCATION: B.A., Chemistry, University of Rhode Island
M.S., Biology, University of Richmond
M.S., Professional Management, Florida Institute of Technology

Additional studies at Rutgers University - Department of Radiation Science

NAME: Lorin C. Brinkerhoff

AREA OF RESP: Organization and Administration

ASSOCIATION: Private Consultant

EXPERIENCE: 36 years

- o Nuclear Safety Technical Expert under contract to EG&G Idaho, Scientech, and Oak Ridge Associated Universities
- o Technical Safety Appraisal Team Leader, DOE, Office of Safety Appraisals
- o Reactor and Nuclear Facility Safety Specialist, AEC/ERDA/DOE
- o Senior Nuclear Engineer, Aerojet General Corporation, Nuclear Rocket Development Center (Nevada Test Site)
- o Manager, Nuclear Critical Facility, Lawrence Livermore National Laboratory (Nevada Test Site)
- o Reactor Foreman, Phillips Petroleum Co., Idaho Test Site
- o Graphite Research Analyst, Hanford Test Site, General Electric Company

EDUCATION: B.S., Chemical Engineering, University of Utah

OTHER: Past member of ANS-15 Standards Committee on Research Reactor Safety

Past Member of ANSI N-16 Standards Committee on Nuclear Criticality Safety

Who's Who in the East

Who's Who in the World

NAME: John M. Cece

AREA OF RESP: Technical Support

ASSOCIATION: President, Menehune Marine Services, Ltd.

EXPERIENCE: 33 years

- o Served on Technical Safety Appraisals of Plutonium Finishing Plant, Feed Materials Production Center, PUREX, H-Canyon, Rocky Flats, Hanford Tank Farms, Brookhaven National Laboratory
- o Completed Emergency Preparedness peer review of Rocky Flats Safety Analysis Report (SAR)
- o Safety Consultant, Hazardous Materials Packaging and Transportation. Accomplishments include: safety reviews of 36" pipeline (Texas), chemical manufacturing plant (Connecticut), technical advisor to DOE and the Santa Fe Railroad for development and production of a hazardous materials training film; technical advisor to DOE/DOT/FEMA/NRC for development and production of emergency preparedness video course.
- o U.S. Department of Energy Headquarters
 - Manager, Hazardous Materials Packaging and Transportation, Office of Operational Safety
- o U.S. Department of Transportation (Coast Guard)
 - Manager, Transportation Safety R&D

EDUCATION: B.S., Engineering, U.S. Coast Guard Academy
Ph.D., Physical Chemistry, University of Rhode Island

NAME: Robert D. Gilmore

AREA OF RESP: Industrial Hygiene

ASSOCIATION: Environmental Health Sciences, Inc. (EHS)

EXPERIENCE: 15 years

- o Participated in TSAs for the FMPC, Y-12, Pantex, LLNL, SNLL, ATR, RFP, Hanford Tank Farms, Allied Signal, and WVDP
- o President, EHS
 - Engineering and technical services firm specializing in environmental and safety sciences
- o Hanford Environmental Health Foundation
 - Director of Operations and Planning: Providing comprehensive occupational and environmental health services including programs in occupational medicine, nursing, psychology, research, and environmental sciences
 - Department Manager: Industrial hygiene services, environmental monitoring, and analytical chemistry
- o Union Carbide Corporation
 - Corporate Staff: Headquarters staff providing technical direction and program guidance to multinational operating components in health, safety, and environmental affairs
 - Manager of Industrial Hygiene Department: Oak Ridge Gaseous Diffusion Plant
- o U.S. Atomic Energy Commission/U.S. ERDA
 - Safety and Industrial Hygiene Engineer; Richland Operations Office

EDUCATION: B.S., Environmental Health, Chemistry, University of Washington
M.S., Industrial Hygiene, University of Washington

OTHER: Certified in Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene

NAME: Charles Grua

AREA OF RESP: Quality Verification

ASSOCIATION: DOE Headquarters, Office of Quality Programs (OQP)

EXPERIENCE: 32 years

- o Quality Assurance Engineer, OQP/DOE
- o Environmental Control Technology, Program Manager, ERDA/DOE
- o Program Manager, Department of Interior, Office of Coal Research
- o Acting Chief, Plant Engineering and Project Management Division, Department of Interior, Office of Saline Water
- o Resident Manager, Various sites of Office of Saline Water, Department of Interior
- o Maintenance Engineering Section, National Institutes of Health, Department of Health, Education, and Welfare
- o Honeywell Applications Engineering
- o Third Assistant Engineer, Lykes Brothers Steamship
- o U.S. Navy-Atlantic Fleet-Boiler and Machinery Officer

EDUCATION: B.S., Marine Engineering, U.S. Merchant Marine Academy

OTHER: Member, American Society of Mechanical Engineers
Member, American Society of Quality Assurance

NAME: Ernest W. Johnson

AREA OF RESP: Maintenance

ASSOCIATION: Private Consultant

EXPERIENCE: 25 years

- o Technical Expert under contract to Oak Ridge Associate Universities and EG&G Idaho
- o Participant on eight earlier Technical Safety Appraisals, Rocky Flats Plant (707, 771, and 776/777), PANTEX, LANL TA-55, LLNL-332, FMPC, and WVNS
- o Consultant to DOE in Aerospace and Facility Nuclear Safety
- o Consultant to EG&G-MAT in numerous technical and programmatic areas
- o Part-time Instructor, University of Dayton
- o Monsanto Research Corporation, Mound Facility
 - Aerospace and Terrestrial Heat Source Design, Testing and Safety Areas
 - Plutonium-238 and -239 technical studies for NRC and DOE
 - SAR and SARP generation for various Plutonium-238 systems
 - Project Manager for numerous heat-source projects
 - Building Manager for plutonium facilities at Mound

EDUCATION: B.S., Chemistry/Mathematics, Wisconsin State College
M.S., Physical Chemistry, Iowa State University
Ph.D., Physical Chemistry, State University of Iowa

OTHER: American Chemical Society
American Society for Metals (ASM International)
Alpha Chi Sigma

NAME: Richard J. Kobelski

AREA OF RESP: Fire Protection

ASSOCIATION: Westinghouse Hanford Company

EXPERIENCE: 16 years

- o Westinghouse Hanford Company
 - Manager, Safety, Quality Assurance, and Security Planning: Coordination of long-range planning and special assessment activities for the Safety, Quality Assurance, and Security Department at the Hanford Site.
 - Manager, Industrial Safety and Fire Protection: Management of the occupational safety, health and fire protection programs for the consolidated Hanford Operations and Engineering contract.
 - Senior Fire Protection Engineer: Coordination of the fire protection programs for Hanford's N-Reactor. Responsible for upgrading the status of the fire protection systems and programs to comply with DOE and NRC requirements.
- o Industrial Risk Insurers
 - Engineering Manager: Managed the fire protection engineering and administrative functions for accounts in the northwestern United States. Responsible for the coordination of inspections, account engineering work, and the development of engineering personnel in the field of HPR property loss prevention.
 - Engineering Supervisor: Supervisor of field engineering staff servicing HPR accounts. Duties included approval of customer specifications and design drawings of sprinkler systems, combustion controls, special extinguishing systems, and other risk protection features.
 - Fire Protection Engineer: Conducted field engineering work which included detailed inspection and reporting of construction, occupancy, special hazard evaluations, and loss investigations as a basis for proper risk analysis by underwriters.

EDUCATION: B.S., General Studies, Eastern Oregon State College
A.S., Civil Engineering, Hartford State Technical College

NAME: Leon H. Meyer

AREA OF RESP: Technical Editor

ASSOCIATION: President, The LHM Corporation

EXPERIENCE: 37 years

- o Technical Expert under contract to Oak Ridge Associated Universities and EG&G Idaho. Served on 25 Technical Safety Appraisals for DOE/EH.
- o Savannah River Plant, E. I. Du Pont de Nemours & Company, Aiken, SC
 - Program Manager: Responsibility for Safeguards and Security, Long-Range Planning, Budget Coordination, Quality Assurance, Environmental Control, Energy Conservation, and Away-From-Reactor Spent Fuel Storage
- o Atomic Energy Division, E. I. Du Pont de Nemours & Company
 - Program Manager, Technical Division: Responsibility for the Defense Waste Processing Facility and the LWR Fuel Reprocessing Design Project
- o Savannah River Laboratory, E. I. Du Pont de Nemours & Company, Aiken, SC, Assistant Director
- o Savannah River Laboratory, E. I. Du Pont de Nemours & Company, Aiken, SC, Director, Separations Chemistry and Engineering Section
- o Savannah River Laboratory, E. I. Du Pont de Nemours & Company, Aiken, SC, Research Manager, Separations Chemistry Division
- o Savannah River Laboratory, E. I. Du Pont de Nemours & Company, Aiken, SC
 - Research Supervisor, Separations Engineering Division: Responsibilities in areas of chemical separations; plutonium, uranium, and thorium processing; and tritium technology
 - Research Engineer, Separations Engineering Division

EDUCATION: B.S., Chemical Engineering, Georgia Institute of Technology
 M.S., Chemistry, Georgia Institute of Technology
 Ph.D., Physical Chemistry, University of Illinois

NAME: Timothy J. Mulligan

AREA OF RESP: Occupational Safety

ASSOCIATION: MSE, Inc.

EXPERIENCE: 13 years

o MSE, Inc.

- Risk Management Division Manager: Responsible for management of the Industrial Safety, Industrial Hygiene, Fire Protection, Environmental, Quality Assurance, and Internal Audit programs
- Safety Advisory Committee Chairman: Responsible for review of SARs
- Safety Office Manager: Responsible for management of the Industrial Safety, Industrial Hygiene, Fire Protection, and Environmental programs
- Safety Engineer: Responsible for development and implementation of safety, industrial hygiene, and fire protection programs including procedures; technical support; inspections; training; investigations; monitoring and surveillance; hazard communication program; fire protection engineering; fire system inspections and tests; review of designs, procedures, work controls; personal protective equipment; record keeping and reporting

o Anaconda Copper Company

- Safety and Health Engineer: Responsible for safety engineering and industrial hygiene including inspections, investigation, training, record keeping and reporting, safety committee meetings, technical support, audiometric testing, dust and noise monitoring

EDUCATION: B.S., Occupational Safety and Health, Montana College of Mineral Science and Technology
B.S., Zoology, Montana State University

NAME: George A. Poda, M.D.

AREA OF RESP: Medical Services

ASSOCIATION: Private Consultant

EXPERIENCE: 45 years

- o Private Medical Consultant
- o Du Pont de Nemours & Company
 - Medical Department Superintendent at Savannah River Plant
 - Sr. Physician at Savannah River Plant
 - Physician at Atomic Energy Division - Dana Plant
 - Physician at du Pont Plant--Buffalo
- o US Navy Medical Corps - Commissioned Officer

EDUCATION: M.D., University of Buffalo
Intern, Buffalo General Hospital
Post Graduate: Indiana University, Columbia University, and John Hopkins Medical School

OTHER: Fellow, American College of Preventive Medicine
(Occupational Medicine)

NAME: Robert W. Tayloe, Jr.

AREA OF RESP: Emergency Preparedness/Training and Certification

ASSOCIATION: Battelle

EXPERIENCE: 10 years

- o Battelle, Principal Research Scientist
 - Criticality Safety and Training
 - Radiation Safety
 - Dosimetry
 - Participated in six Security Inspections and Evaluations of DOE Facilities
 - Participated in seven previous Technical Safety Appraisals
- o Portsmouth Gaseous Diffusion Plant, Nuclear Criticality Safety Staff
 - Member of Nuclear Safety Committees
 - Conducted audits, training, analysis, interface with operations and engineering, instrumentation, and resolution of inventory differences
 - Developed emergency drills, participated in Emergency Management Exercises, Member of Emergency Preparedness Committee

EDUCATION: B.S., Nuclear Engineering, North Carolina State University
Completed course work toward M.S. Nuclear Engineering, Ohio State University

OTHER: Lectured on "Safety in Handling UF₆," 1983-1985, for DOE Office of Nuclear Safety seminar on Prevention of Significant Nuclear Events
Professional Engineer, State of Ohio

NAME: Thomas L. Van Witbeck

AREA OF RESP: Operations/Auxiliary Systems

ASSOCIATION: TOMA Enterprises

EXPERIENCE: 30 years

- o TOMA Enterprises
 - General Manager: Provide services to government and commercial nuclear industry in the areas of operations, maintenance, and safety
- o SCIENTECH, Inc.
 - Provided project management and technical consulting services to government agencies and the utility industry
- o PLD Energy Services
 - Vice President: Supported nuclear plant operations
- o Energy Incorporated
 - Vice President: Provided maintenance management systems, plant operations and quality assurance services
 - Director: Management and quality assurance audits and technical support of nuclear utilities
 - Group Manager: Onsite team to assess the Three Mile island accident
 - Principal Consultant: Technical support of commercial reactors and DOE facilities and programs
- o Westinghouse Electric Corporation
 - Shift Supervisor/Supervisory Engineer: Commercial nuclear plant start-up and testing
- o Oregon State University
 - Reactor operator and health physicist
- o U.S. Navy
 - Petty Officer in charge of water chemistry and radiological programs aboard USS Bainbridge DLGN25
 - Instructor US Navy Nuclear Power School

EDUCATION: U.S. Navy Engineering Laboratory Technician School
U.S. Navy Nuclear Power School
B.S., Nuclear Engineering, Oregon State University

OTHER: Registered Professional Engineer
Licensed Reactor Operator (OP-2315)

NAME: William J. Zielenbach

AREA OF RESP: Security/Safety Interface and Site/Facility Safety Review

ASSOCIATION: Battelle

EXPERIENCE: 33 years

- o Battelle
 - Technical Assurance Manager, D&D Battelle Columbus Nuclear Material Facilities
 - Staff Scientist: Security Evaluations (3) and Technical Safety Appraisals (9) of DOE facilities; nuclear package QA
 - Project Manager: Nuclear fuel cycle case studies and facility safety analysis
 - Project Leader and Member: Various programs for design and operation of irradiation experiments for Materials Testing Reactor, Engineering Test Reactor, Battelle Research Reactor, Experimental Breeder Reactor-II, University of Michigan Reactor (fueled and nonfueled)
 - Researcher: Development of high-temperature air frame bearings and seals, and naval bearings; materials development for Aircraft Nuclear Propulsion program

EDUCATION: B.S., Chemical Engineering, University of Pennsylvania
M.S., Nuclear Engineering, Ohio State University

OTHER: Member, American Nuclear Society

NAME: Wilbert G. Zurliene

AREA OF RESP: Radiological Protection

ASSOCIATION: General Dynamics Services Company

EXPERIENCE: 26 years

- o Reactor Plant Services, Engineering Supervisor
 - Participated in TSAs at Hanford Tank Farm and ATR, and pre-TSA for ORNL
 - Evaluation of Radiation Protection Programs at power reactors and DOE facilities
 - Establishment of Radiological Engineering organization at power reactors and DOE facilities including interim management
 - Respiratory Protection
- o General Dynamics/Electric Boat Division, Radiological Controls Staff
 - Radiological Engineering including design review and operations support
 - Management of Operational Radiological Controls
- o U.S. Navy
 - Naval Nuclear Power Program

EDUCATION: B.S., Business Administration, University of Rhode Island

OTHER: Member, American Nuclear Society and ANS 6/5.6.2, Radiation Protection Design Criteria for Post Accident Health Physics Facilities and Access Control

APPENDIX A-4

**Biographical Sketches of Team Members
Tiger Team Compliance Assessment - Management Subteam
Pinellas Plant**

NAME: James A. Turi

AREA OF RESP: Management Team Leader

ASSOCIATION: U.S. Department of Energy

EXPERIENCE: 21 years

- o U.S. Department of Energy
 - Director, Office of Special Applications: Responsible for design, development, production and testing of radioisotope thermoelectric generators for NASA and DOD
 - Director, Division of Uranium Mill Tailings Program Office: Responsible for the remediation of uranium mill tailings sites and associated vicinity properties
- o West Valley Demonstration Project
 - Program Manager: Responsible for the solidification of liquid high-level radioactive waste and decontamination and decommissioning of nuclear facility
- o Program Manager for a wide variety of development, design, construction, safety testing and analysis, and facility operation for liquid metal and light-water reactor and magnetic-fusion energy programs
- o US Nuclear Regulatory Commission
 - Nuclear facility siting and operations

EDUCATION: B.S., Nuclear Engineering, Lowell Technological Institute, 1968
M.S., Nuclear Engineering, Massachusetts Institute of Technology, 1971

OTHER: Member, American Nuclear Society
Registered Professional Engineer

NAME: Raymond DiSalvo

AREA OF RESP: Management

ASSOCIATION: Battelle Memorial Institute - Columbus Division

EXPERIENCE: 16 years

- o Battelle Memorial Institute - Columbus Division
 - Vice President, Systems Safety and Security: Responsible for the technical and administrative management of 70 professional safety and security engineers
 - Personally participated in security and safety evaluations at DOE facilities/sites including Savannah River Plant, Brookhaven National Laboratory, Nevada Test Site, Pantex, West Valley Demonstration Project, and Bonneville Power Administration
- o US Nuclear Regulatory Commission
 - Program Manager: Responsible for developing and conducting research programs essential to the technical basis for the regulation of commercial nuclear facilities

EDUCATION: A.B., Chemistry, Rutgers University
Ph.D., Solid State Science, Pennsylvania State University

OTHER: Member, American Nuclear Society
Chair, ANS Nuclear Reactor Safety Division 1989-1990
Member, Systems Safety Society
Member, American Management Association

NAME: Thomas J. Mazour
AREA OF RESP: Management
ASSOCIATION: Private Consultant
EXPERIENCE: 19 years

- o Private Consultant
 - Participated in 15 Technical Safety Appraisals and three Tiger Team Assessments
 - Developed and presented training for DOE site surveillance personnel and DOE Tiger Team members/leaders
 - Conducted evaluations of operations and operation's training for a nuclear utility based on INPO Plant Evaluation criteria
 - Evaluated operations, organization and administration, and training areas for NRC inspections of commercial nuclear power plants
 - Revised TSA performance objectives and criteria based on experience from first round of TSAs
- o Analysis and Technology, Inc.
 - Supported the NRC in evaluating utility training programs and developing training review criteria areas and regulations
 - Evaluated operations and emergency operating procedures areas for nuclear utilities based on NRC criteria
 - Managed a group of Engineers and Scientists conducting applied research and development for DOD, NRC and DOE clients
- o Burns and Roe, Inc.
 - Design Engineer and Licensing Engineer for Clinch River Breeder Reactor and Commercial Pressurized Water Reactor
 - Group Manager, Mechanical Engineering and Auxiliary Systems
- o U.S. Navy
 - Nuclear Weapons Officer and qualified as Chief Engineer, Navy Nuclear Power Plants
 - Supervised the operation and maintenance of Navy nuclear power plants

EDUCATION: B.S., Mathematics, U.S. Naval Academy
M.S., Industrial Engineering, University of New Haven
M.B.A., University of New Haven
Sc.D. (candidate), Mgmt. Systems, University of New Haven

OTHER: Registered Professional Engineer (Nuclear/Mechanical)
Adjunct faculty member, University of New Haven: Instruct
Industrial Engineering and Operations Research courses

NAME: David Schweller

AREA OF RESP: Management

ASSOCIATION: DBS Associates, Inc. - Private Consultant

EXPERIENCE: 35 years

- o President (3 years) DBS Associates, Inc.
 - Private Consultants in organization, management, safety and security
 - Eleven previous TSA's; Member of the Assistant Sect. Environment, Health and Safety Working Group to review the TSA program; two previous Management Tiger Teams; Safety Advisor for DOE Security Inspection and Evaluation Teams; evaluator for FEMA Nuclear Utility Emergency Drills
- o Manager and Contracting Officer (10 years), DOE, Brookhaven Area Office
- o Director, Safety Division (14 years), DOE, Brookhaven Area Office
- o Reactor Safety Specialist (1 year), AEC
- o Chief, Experimental Physics (2 years), Martin Nuclear Division
 - Designed, built, and operated three zero-powered experimental reactor facilities
- o Reactor Physicist (5 years), Combustion Engineering Nuclear Division
 - Designed, built, and operated three zero-powered experimental reactor facilities

EDUCATION: B.S., Engineering Physics, NYU College of Engineering

OTHER: Numerous Government Awards for Performance
Licensed Reactor Operator

APPENDIX B

PINELLAS TIGER TEAM ASSESSMENT TENTATIVE ON-SITE SCHEDULE

	1/15 Monday	1/16 Tuesday	1/17 Wednesday	1/18 Thursday	1/19 Friday
CERCLA			AM 1 WS Document Review PM PF W/QA/TSCA on ASTs	→	
GW	AM Tour/Site Mtg PM Tour/Site Mtg	AM RI/FS/RD/RA 4.5 acre Review PM 4.5 acre IRA Tour/Review	AM NE Site Car Review PM Field Status - NE Site (Well Status)	AM RCRA SWMU's Site-wide Mon. Review PM USGS Study Mtg	AM Rad Issues PM GW Sampling SOPs Field Imp
Air	AM Tour/Site Mtg PM Tour/Site Mtg	Overview discussion w/air liaison PM Visit Rad Air Services Rad Emission Monitors (w/Rad)	Visit RAD Sources - Bldg. 100 & Area 300	Visit Air Sources - Bldg. 100 & Area 300	Visit Bldg. 100 & Area 300
QA/TSCA	AM Tour/Site Mtg PM Tour/Site Mtg	Tour Bulk Chem Storage Areas PM Review NEPA Doc.	Tour USTs & ASTs PM Review Docs.	Asbestos Doc. Review PM Tour Sanitary Landfill	Pesticide Program Review Outside Contractor Review PM PCB Doc. Review
SW	AM Tour/Site Mtg PM Tour/Site Mtg	Interview Site Env. Contact PM Tour Areas-600, 700, 1000, 1040 & SWMUs	Bldg. Inspection 100	Wtr Source Ident./ Radiation Effluent PM Bldg. Inspection 100 - Interview Lab Personnel	Mtg w/Rad & GW Specialists PM Records Review/Documentation
Waste Mgmt	AM Tour/Site Mtg PM Tour/Site Mtg	Doc. Process Review PM Tour Bldgs. 200, 600, 1040, 400, 800	Waste Handling Storage, Manf. 195, 123, 105	W.H.S. 194, 193, 191, 183, 184, 162, 161, 160, 159, 185, 181, 180, 174, 158, 157, 156, 155, 175, 176, 184	W.H.S. Bldg. 200, 1040 The Env. Trtmt., Radioactive Metal Trtmt, Waste Tanks
Rad	AM Tour/Site Mtg PM Tour/Site Mtg	ALARA PM W/Air	W/Air	W/Surface Water	W/Groundwater PM Records Review

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PINELLAS TIGER TEAM ASSESSMENT TENTATIVE ON-SITE SCHEDULE

	1/22 Monday	1/23 Tuesday	1/24 Wednesday	1/25 Thursday	1/26 Friday
CERCLA	Site & Process Descrip. Briefing PM Site Tour - Process line & IWS	Continue Site Tour PM IWS Doc. Review	IWS Doc. Review PM SARA Title III Interview-File Review	Spell Reporting Documentation Interviews PM Follow-up Findings	Follow-up Findings
GW	GW Findings PM IWS Tour	GW Findings PM IWS Doc.	w/CERCLA w/CERCLA	w/CERCLA	Follow-up Findings
Air	Visit Bldg. 100 & Area 300 Visit Bldg. 100 & Area 300	Visit Bldg. 100 & Area 300 PM Visit Air Sources in Bldg. 400 & 500	Visit Air Sources in Bldg. 600, 700, 1000/1040 PM Discussion w/staff on asbestos, removal & comp. w/asbestos NESHAPS	Discussion w/staff on dose calc. (w/rad specialist) PM Follow-up activities	Follow-up Findings
QA/TSCA	Review QA Handling on & off-site Labs PM Review & Rechecks	Tour On-Site Lab Facilities Tour On-Site Lab Facilities	Tour Off-Site Lab Tour Off-Site Lab	Revisits/Rechecks PM Findings	Follow-up Findings
SW	Inspect Wastewtr Trtmt. PM Inspect Ponds/ Stormwater Basins	AM Tour On-Site Lab PM Tour On-Site Lab	AM Tour Off-Site Lab PM Observe Water Sampling	AM Review WWTP Records, Water Distribution PM Review SPCC Practices	Follow-up Findings
Waste Mgmt	Rad Waste Storage 108, 182, Bldg. 400, 800 PM Sludge Holding Tank Container Storage Bldg.	RCRA permit File Review	Follow-up Inspections Records Review, Training, <u>Manifests</u>	Review S&A PM Findings	Follow-up Findings
Rad	Radwaste Program w/Waste Mgmt	Rad/QA Lab Visit PM Soil/Biota	CERCLA Rad (if any) External Rad Pgm PM Dose Assessments	Air Dose PM Finish - Dose Assessment	Follow-up Findings

LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
A-01	"Tritium in Air-On and Offsite Environmental Monitoring"/"Env. Monitoring"/ Env. Monitoring Procedure, EM-1.03	GEND	5/9/89
A-02	"Plutonium in Air-On and Offsite Environmental Monitoring", EM-2.02	GEND	5/11/89
A-03	Comprehensive Environmental Assessment and Response Program	Albuquerque Operations Office	5/87
A-04	"Solvent Degreasers"/EH&S Standard #83	GEND	1/3/89
A-05	"Application of Florida Air Pollution Laws to the Pinellas Plant"	Memo. E Patenaude/PAO/to James A. Stout	12/15/89
A-06	"Application of Florida Air Pollution Laws to the Pinellas Plant"	Memo. JA Stout/Albuquerque Ops/ to EE Patenaude	12/8/89
A-07	"Actions to Strengthen Environmental Compliance"	Memo. GH Twining/Albuq Ops/to those listed	8/22/89
A-08	"Application of Florida Air Pollution Laws to the Pinellas Plant"	Memo. J.J. Chavez/Albuquerque Ops/to File	10/20/89
A-09	"Review of Pinellas Plant Air Emission Sources"	Memo. HF Gregory (PAO to JS Caven (GEND)	
A-10	"Fume Scrubbers"	Memo. CK Hall/EH&S/to D. Ingle (PAO)	12/14/89
A-11	Letter-12/12/89 County Visit to Plant	D Ingle/PAO to Eric Fehrmann	12/14/89
A-12	Environmental Survey Findings-Revised Implementation Plan	GEND	1/14/88
A-13	Toxic Chemical Release Inventory Form	Memo. T Douglas (GEND)/to D Ingle (PAO)	6/26/89

LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
A-14	Submittal of Toxic Chem. Release Inventory Forms as Required Under Section 313 of the Superfund Amendment & Reauthorization Act of 1986	Memo-T Douglas (GEND) to D Ingle (PAO)	9/28/88
A-15	1987 Pinellas Plant Environmental Monitoring Report	Environmental Health & Safety Programs	4/88
A-16	"Quality Program Plan (QPP) for the Fire Protection Program	D.E. Magness/GEND	12/5/89
A-17	"A Technical Evaluation of the Air Monitoring Systems in Use for Exhaust Stack Emissions and Env. Measurements at Pinellas"	IT/Radiological Science Labaoratory	9/30/86
A-18	1988 Pinellas Plant Environmental Monitoring Report	Environmental Health & Safety Programs	6/89
A-19	Letter Concerning Fume Scrubbers	DS Ingle (PAO) to Eric Fehrmann	12/21/89
A-20	Letter Concerning Air Permitting	G Robbins/Board of Comm., Pinellas County/E Patenaude	1/24/90
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LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
GW-01	Env. Survey Prelim. Report-Pinellas	US DOE Office of Env. Audit	11/87
GW-02	Pinellas Plant Env. Protection Implementation Plan	GEND-RD Klein	2/9/90
GW-03	Feasibility Study Report 4.5 Acre Site	Haztech, Inc. & S&ME, Inc.	10/87
GW-04	Additional Assess. Tech. Memo NE Groundwater Investigation	CH ² MHill	2/89
GW-05	Contamination Assess. Report-NE Groundwater Investigation	CH ² MHill	7/87
GW-06	Florida Administrative Code Part IV, Water Quality Criteria-Groundwater	State of Florida	9/89
GW-07	FDER-Hazardous Waste Oper. Permit Applic. & EPA HSWA (Draft)	Florida DER and US EPA Region IV	12/89
GW-08	Florida Ground Water Guidance Concentrations	Florida DER	2/89
GW-09	Reconnaissance of Water Quality at a US DOE site, Pinellas County, FL	USGS-Water-Resources Inv. Rept 85-4062	1985
GW-10	Release Site Database Preliminary Draft	Weston, Inc.	12/89
GW-11	4.55 Acre Site Interim Groundwater Recovery & Treatment System	CH ² MHill	8/88
GW-12	Technical Memorandum 4.5 Acre Site Investigation	CH ² MHill	9/5/89
GW-13	Contaminant Assess. Report (4.5 Acre Site)	Soil & Material Engineers, Inc.	1986
GW-14	Response to FDER Comments Regarding Interim Remedial Action Plan	FE Davis-US DOE Albuquerque Operations Office	3/22/88
GW-15	Environmental Survey Findings Revised Implementation Plan	JS Caven-GEND	1/14/88

LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
GW-16	Aquifer Test Results & Water Quality Under & Between Bldgs.	Ltr. from TH Yorke USGS to EE Patenaude-DOE/PAO	9/21/87
GW-17	Corrective Measure Study	CH ² MHill	11/89
GW-18	Rpt. of Investigation of No. 2 Diesel Fuel Oil Leak	GEND Investigation Report	3/31/83
GW-19	Pinellas Plant Site Environ. Report for Calendar Year 1988	US DOE/PAO	6/1/89
GW-20	4.55 Acre Site Volatile Organic Compound Treatment System	CH ² MHill	7/89
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LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
IWS-1	Contaminant Assessment Report [4.5 Acre Site]	Soil & Material Engineers, Inc.	5/86
IWS-2	Feasibility Study Report DOE 4.55 Acre Site	Haztech, Inc. and S&ME, Inc.	10/87
IWS-3	Consent Order State of Florida vs DOE OGC Case #85-0682	State of Florida, Dept. of Environ. Regulation	1985
IWS-4	CEARP Phase I Installation Assessment Pinellas Plant Review Draft	DOE Albuquerque Operations Office	5/87
IWS-5	Hazardous Waste Operating Permit Application (draft)	Florida Department of Environmental Regulation	12/7/89
IWS-6	Environmental Survey Preliminary Report, Pinellas Plant	U.S. DOE (DOE/EH/OEV-13-P)	11/87
IWS-7	1987 Pinellas Plant Environmental Monitoring Report	G.E. (GEPP-EM-1114)	4/88
IWS-8	Pinellas Plant Site Environmental Report for Calendar Year 1988	G.E. (GEPP-EV-1193)	6/1/89
IWS-9	Pinellas Plant Contingency Plan for the Hazardous Waste Mgmt. Fac.	G.E. (GEPP-SP-1104)	10/88
IWS-10	Northeast Groundwater Investigation, Additional Assessment		
	Technical Memorandum	CH2M Hi11 (FCR26350.A0)	2/89
IWS-11	Contaminant Assessment Report for the Pinellas plant NE Groundwater Inves	Ch ² M Hill (FC22049.AO)	7/87
IWS-12	Toxic Chemical Release Inventory Form for 1988	Letter from T.A. Douglas (GE) to D. Ingle (PAO)	6/26/89
IWS-13	Toxic Chemical Release Inventory Form for 1987	Letter from T.A. Douglas (GE) to D. Ingle (PAO)	9/28/88
IWS-14	Contaminant Assessment Rpt. & Feasibility Study Work Plan Comments	Ltr. from K.R. Johnson (FDER) to D. Ingle (DOE/PAO)	11/20/86

LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
IWS-15	Cover Ltr Responding to FDER Comments on 4.5 Acre CAR and FSWP	Ltr. frm EE Patenaude (PAO) to RD Garrity (FDER. SW Dist.)	1/21/87
IWS-16	Memo on 4.5 Acre Cleanup Project	R.J. Zimmerman (GEND) to W. McGovern (GEND)	3/23/87
IWS-17	FDER Comments on 4.55 Acre Site Intermin Remedial Action Plan	Ltr. from KR Johnson (FDER) to D. Ingle (DOE/PAO)	9/15/87
IWS-18	FDER Comments on 4.55 Acre Site Interim Remedial Action Study & Feas. Study Rpt.	Ltr. from KR Johnson (FDER) to D. Ingle (DOE/PAO)	11/9/87
IWS-19	Predesign Tech. Memo, 4.55 Acre Site Interim Groundwater Recovery & Treatment Sys	CH2M Hi11 (FCR 26042.C1)	8/88
IWS-20	Predesign Tech. Memo, 4.55 Acre Site Volatile Organic Compound Treatment Sys.	CH2M Hi11 (FCR27721.A1)	7/89
IWS-21	Feasibility Study Work Plan, DOE Facility Pinellas County, Florida	Soil & Material Engineers, Inc.	8/7/86
IWS-22	CEARP Phase I Installation Assessment Pinellas Plant Draft	DOE Albuquerque Operations Office	12/87
IWS-23	Section 312 Tier II Report for 1988	EE Patenaude to SERC, LEPC Dist. 8, Seminole Fire Dept.	3/2/89
IWS-24	Section 312 Tier II Report for 1987		
IWS-25	PA/SI Review Under CERCLA Section 120	Ltr. from HK Lucius (EPA Region IV) to D. Ingle (DOE/PAO)	7/19/89
IWS-26	ES&H Documents for Public Reading Room	DOE/PAO	12/19/89
IWS-27	SARA Section 311, 40 CFR 370.21 Submittal	EE Patenaude to L. Gager, Dept. of Community Affairs	10/16/87
IWS-28	SARA Section 311, 40 CFR 370.21 Submittal	EE Patenaude to JE Greene-Tampa Bay Regional Council	10/16/87
IWS-29	SARA Section 311, 40 CFR 370.21 Submittal	EE Patenaude to Chief J. McConnell-Seminole Fire Dept.	10/16/87

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
IWS-30	Current Status of Actions Relating to the 4.5 Acre Site	Memo from HF Gregory (DOE/PAO) to JS Caven (GEND)	11/30/89
IWS-31	Feasibility Study Plan for Pinellas Plant, NE Groundwater Inves.	Ch ² MHill	11/87
IWS-32	Identification & Removal of Waste	Haztech	9/9/85
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LIST OF DOCUMENTS

Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-01	Warehouse Facility Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/07/85
NEPA-02	Remote Receiving Facility Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/07/85
NEPA-03	LANCE (Follow-On) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/07/85
NEPA-04	Advanced Air-to-Surface Missile (AASM) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/07/85
NEPA-05	W88-Trident Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/07/85
NEPA-06	Small ICBM Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-07	W81 Standard Missile Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-08	W88 Trident Missile Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-09	Short Range Attack Missile (SRAM-2) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-10	Anti-Submarine Warfare/Standoff Weapon (ASW/SOW) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-11	Anti-Submarine Warfare/Nuclear Depth Bomb (ASW/NDB) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-12	Tactical Follow-On Missile (TAC/FOM) Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-13	Remote Receiving and Shipping Facility Memo/ADM	Carlos E. Garcia/AL/D.R. Ellis, AL	02/04/86
NEPA-14	Small ICBM "MTF"/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	04/06/87
NEPA-15	Anti-Submarine Warfare/Nuclear Depth Strike Bomb (BXX ND/SB) "MTF"/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	04/06/87

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-16	Tactical Follow-On Missile "MTF"/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	04/06/87
NEPA-17	Short Range Attack Missile (SRAM II) MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	04/07/87
NEPA-18	Hard Target Kill (HTK) "MTF"/ADM	Unsigned, uninitialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-19	Nuclear Depth Bomb (NDB) "MTF"/Memo	Unsigned, uninitialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-20	Anti-Submarine Warfare/Nuclear Depth Strike Bomb (BXX ND/SB) "MTF"/ADM	Unsigned, uninitialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-21	Follow-On Lance (FOL) "MTF"/ADM	Unsigned, uninitialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-22	Short Range Attack Missile (SRAM-II) "MTF"/ADM	Unsigned, uninitialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-23	Small ICBM "MTF"/ADM	Unsigned, but initialed (C. Soden)/AL/Randy F. Reddick, AL	01/20/88
NEPA-24	Sea Lance/Stand Off Weapon (SOW) "MTF"/ADM	R.L. Peterson/AL/Randy F. Reddick, AL	01/26/89
NEPA-25	Tactical Air-to-Surface Munition (TASM) "MTF"/ADM	R.L. Peterson/AL/Randy F. Reddick, AL	01/26/89
NEPA-26	Follow On To Lance (FOTL) "MTF"/ADM	R.L. Peterson/AL/Randy F. Reddick, AL	01/26/89
	ADM resubmitted for new fiscal year		12/14/89
NEPA-27	Short Range Attack Missile (SRAM II/W89) "MTF"/ADM	R.L. Peterson/AL/Randy F. Reddick, AL	01/26/89
	ADM resubmitted for new fiscal year		12/14/89
NEPA-28	Nuclear Depth Strike Bomb (NDSB/B90) "MTF"/ADM	R.L. Peterson/AL/Randy F. Reddick, AL	01/26/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-29	Building 200 Exhaust System MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	08/04/88
NEPA-30	Cafeteria Kitchen Upgrade MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	01/20/89
NEPA-31	Area Entry Control System Memo/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	03/19/86
NEPA-32	Deionized Water System Eliminate Wastewater MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	10/13/89
NEPA-33	Replacement of Air Handling Units MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	10/13/89
NEPA-34	4.5 Acre Site Interim Remedial Action Program - Original ADM returned by AL		
	with request for more info.	Constance L. Soden/AL/Randy F. Reddick, AL	10/13/89
	Revised ADM submitted	H.F. Gregory/PAO/J. Themelis, AL	11/13/89
	MTF issued	Constance L. Soden/AL/Jonathan B. Halpern, AL	11/30/89
NEPA-35	Smoke Vent Replacement MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	10/13/89
NEPA-36	Upgrade and Expansion of Electrical System MTF/ADM	Constance L. Soden/AL/Randy F. Reddick, AL	10/13/89
NEPA-37	Security Center ADM - no MTF included in files (cover memo from GEND to PAO)	Cover Memo: R.D. Klein/GEND/H.F. Gregory, PAO	08/23/89
NEPA-38	Child Care/Partnership School-Original ADM submitted	Colette A. Broussard/PAO/J.G. Themelis, AL	04/26/89
	Returned by AL for revisions	Randy F. Reddick/AL/Ronald L. Peterson/AL	10/17/89
	ADM Resubmitted - No MTF in file.	PAO Resubmittal Memo: H.F. Gregory/PAO/J.G. Themelis, AL	11/29/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-39	Neutron Devices Department General Operating Procedure Manuals (in particular A.3.03-Employee and Plant Environmental Health & Safety)	General Electric Company/GEND/-	11/30/89
NEPA-40	Pinellas Plant FY 1990 Site Specific Implementation Plan	R.D. Klein/GEND	12/19/89
NEPA-41	FY 1990 Pinellas Plant Five-Year Plan Supplement to the FY 1989 Site Development Plan	-/GEND/Distribution	10/25/89
NEPA-42	AL Order 5440.1B Implementation of the National Environmental Policy Act (NEPA)	R.G. Romatowski/ALO/-	11/12/82
NEPA-43	Memorandum/Initiation of National Environmental Policy Act (NEPA) Documentation	W.A. Vaughan/DOE/Distribution	11/29/81
NEPA-44	Memorandum/National Environmental Policy Act (NEPA) Implementation- Delegation of Authority	R.L. Morgan/DP/Mgr. ALO	4/20/81
NEPA-45	Memorandum/National Environmental Policy Act (NEPA) Action Description Memorandum (ADM) Memorandum-to-File (MTF) Review	D.L. Krenz/ALO/E.E. Patenaude	8/15/89
NEPA-46	Memorandum/National Environmental Policy Act (NEPA) Documentation, AL Review and Approved Channels	J.G. Themelis/ALO/E.E. Patenaude	12/23/87

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-47	Memorandum/Approval of Safety and National Environmental Policy Act (NEPA) Documentation		
	Act (NEPA) Documentation	J.T. Guiney/ALO/E.E. Patenaude	10/31/89
NEPA-48	Memorandum/National Environmental Policy Act (NEPA) Documentation	J.G. Themelis/ALO/E.E. Patenaude	3/31/89
NEPA-49	Memorandum/Implementation of the National Environmental Policy Act (NEPA)	C.E. Garcia/ALO/R.Y. Lowry	2/6/85
NEPA-50	Environmental Assessment, Pinellas Plant, St. Petersburg, FL	U.S. Energy & Research Administration	12/75
NEPA-51	Environmental Assessment, Pinellas Plant, St. Petersburg, FL	U.S. Department of Energy	7/83
NEPA-52	Guidance Related to Analysis of Impacts to Workers in National Environmental Policy Act (NEPA) Documentation		
	Policy Act (NEPA) Documentation	Baynard, E.C./Asst. Sec'y-Environ., Safety & Health	7/10/88
NEPA-53	Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508)		
	Environmental Policy Act (40 CFR 1500-1508)	Council on Environmental Quality	7/86
NEPA-54	Compliance with the National Environmental Policy Act (NEPA): Amendments to the DOE NEPA Guidelines		
	the DOE NEPA Guidelines	Federal Register 52 (240):47662-47670	12/15/87
NEPA-55	Pinellas Plant's Monthly Environmental Compliance Report - 12/1-12/31, 1989	Pinellas Area Office	12/89
NEPA-56	Memorandum NEPA Guidance Related to Memos-to-File & Categorical Exclusions	Garry W. Gibbs/DOE/Distribution	3/25/88
NEPA-57	DOE Order 4700.1/Project Management System	Office of Proj. & Fac. Mgmt./DOE/All Dept. Heads	3/6/87

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
NEPA-58	Memorandum/Construction of Department of Energy Projects	J.F. Salgado/Under Secretary DOE/	12/2/87
\	\	Asst. Secretaries & DOE Operations Offices Managers	\
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Document Number	Title/Description	Author/Organization/Recipient	Document Date
QA-01	Quality Program Plan (QPP) for the Environmental Protection Prog.	R.D. Klein	5/23/89
QA-02	Quality Prog. Plan for the Env. Chemistry Lab in the Instrumental/ Environmental Chemistry Unit	N.H. Parsons	7/21/89
QA-03	Quality Assurance Survey Report 89-NW-001	E. Ortiz	2/9/89
QA-04	AL Non-Weapons Quality Assurance Survey	C.N. Christy	3/10/89
QA-05	Chain of Custody Procedure for Regulatory Compliance Samples and Environmental Evaluation Samples Number EM-6.01	D.V. Gray	10/21/87
QA-06	Ltr-Environmental Monitoring Procedure EM-6.01 "Chain of Custody Procedure for Regulatory Compliance Samples & Environmental Evaluation Samples	R.D. Klein (GEND to C. Rees Nickerson(Westinghouse))	1/26/90
QA-07	Tritium in Onsite Surface Waters EM-4.01	R.D. Klein	7/20/88
QA-08	Tritium in Offsite Surface Waters EM-4.02	R.D. Klein	5/11/89
QA-09	Response to Finding: "Some Documents in the Env. Chem. Lab (ECL) are not properly numbered"	C.N. Christy	Undated
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Document Number	Title/Description	Author/Organization/Recipient	Document Date
R-01	Pinellas Plant Orientation/Presentation Material	US DOE Pinellas Area Office	1/15/90
R-02	Pinellas Plant Environmental Protection Implementation Plan	R.D. Klein, Ph.D	2/9/90
R-03	Pinellas Plant Site Environmental Monitoring Report-1988	DOE Pinellas Area Office	6/1/89
R-04	Pinellas Plant Site Environmental Monitoring Report-1987	DOE Pinellas Area Office	4/88
R-05	Pinellas Plant ES&H Self Assessment & Long Range Improvement Plan	1/15/90	1/15/90
R-06	Environmental Monit. Proc. (EMPs) EM-1.01 Trit. Stack Releases-Daily Columns	R.D. Klein	5/9/89
R-07	EMP/EM-1.02 Tritium Stack Releases-Monthly Columns	R.D. Klein	5/10/89
R-08	EMP/EM-1.03 Tritium Stack Releases-in Air-On and Offsite	R.D. Klein	5/9/89
R-09	EMP/EM-2.01 Plutonium Stack Releases-Bldg. 400	Daniel Slack	11/2/87
R-10	EMP/EM-2.02 Plutonium in Air-On & Offsite Env. Monitoring	R.D. Klein	5/11/89
R-11	EMP/EM-2.03 Plutonium Sampling Train Rotameter	R.D. Klein	5/9/89
R-12	EMP/EM-3.01 Tritium in Process Waste Waters	R.D. Klein	7/20/88
R-13	EMP/EM-3.02 Tritium & Chemical Constituents in Industrial Waste Waters	R.D. Klein	9/7/89
R-14	EMP/EM-4.01 Tritium in Onsite Surface Waters	R.D. Klein	7/20/88
R-15	EMP/EM-4.02 Tritium in Offsite Surface Waters	R.D. Klein	5/11/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
R-16	EMP/EM-5.01 Plutonium in Soils-On and Offsite Env. Mon.	Daniel Slack	11/2/87
R-17	EMP/EM-7.01 Quality Program Plan (QPP) for the Env. Protection Prog.	R.D. Klein	5/23/89
R-18	Radiological Safety (RS) 5.1 ALARA	GEND	5/18/89
R-19	Health Physics-10 Daily Routines	JR Majesticj	11/1/89
R-20	1988 Annual Radionuclide Air Emissions Report	R.D. Klein	4/17/89
R-21	1988 Radioactive Effluent/Onsite Discharges Report	R.D. Klein	3/2/89
R-22	Pinellas Plant Facts	DOE/PAO	10/89
R-23	DOE AL & ES&H CEARP Phase I Document	AL Ops.	5/87
R-24	Env. Survey Preliminary Report-Pinellas Plant	ES&H Office of Env. Audit	11/87
R-25	Bldg. 200 Exhaust Hepa Filter Testing	T. Merewether/R. Meeks	12/01/88
R-26	Hepa Filter Replacement Bldg. 400	T. Merewether/R. Meeks	10/19/89
R-27	ANSI N 101.1-1972	ANSI	1972
R-28	Federal Standard 209 D	Fed. Supply Service-GSA	6/15/88
R-29	Radioactivity in Well Water on the Gates Property	R.J. Zimmerman	8/28/85
R-30	H-3 Analyses on Well Water Samples	Ben Prewitt	4/6/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
R-31	Furnace Temperature Log/HP-10	B. Burkhart	1/26/90
R-32	Technical Evaluation of Air Monitoring Systems	IT/Radiological Sciences Lab	9/30/86
R-33	DOE/EV/1830-T5 ALARA	Pacific Northwest Lab	4/80
R-34	PNL-6577 HP Manual of Good Practices (ALARAL	6/88	6/88
R-35	GEND GOP G.1.13 Responsibilities ALARA	GEND	7/30/84
R-36	ANSI 10.3-1986 Guidelines for the Doc. of Digital Comp. Programs	ANSI/ANS	5/2/86
R-37	GOP Calibration Labeling Practices B.1.0B	GEND	1/25/89
R-38	GOP Calibration Maintenance Policy A.4.02	GEND	10/5/89
R-39	GOP Calibration/Verification of Inst. Equip. & Gages	GEND	1/25/89
R-40	Write-up on Inst. Sensitivities	R.A. Burkhart	1/24/90
R-41	Calibration Records	IC & M	Various
R-42	Procedure for Estimating Annual Releases of Krypton-85	R.A. Burkhart	1/25/90
R-43	Env. Survey Findings Revised Implementation Plan	J.S. Caven	1/14/88
R-44	GEND Standard #5.9 Radioactive Waste Handling	GEND	3/10/89
R-45	GEND Standard #5.6 Control of Potentially Cont. Hazardous Wastes	GEND	8/16/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
R-46	GEND Standard HP-09 Radioactive Waste Shipments	A.S. Weaver	5/31/89
R-47	NIST Radiological Standards (Chem Labs)	CN Christy	1/24/90
R-48	Various Labaoratory (Radiological) Results	Rad Lab	Various
R-49	EML 30th Set QA Sample Results of 7/5/89	R.D. Klein	8/4/89
R-50	Env. Chem Lab Mo. and Daily Exhaust Stack Analysis	C.N. Christy	1/11/90
R-51	Env. Chem Lab Low Level Liquid scintillation Counting of Aqueous Samples	C.N. Christy	10/2/89
R-52	Env. Chem Lab Low Level Analysis of Environmental Gel Columns	C.N. Christy	9/7/89
R-53	Env. Chem Lab Data Analysis of Alpha Spectrometry Results	C.N. Christy	12/5/89
R-54	Env. Chem Lab Alpha Spectrometry of Plutonium Plated Risks	C.N. Christy	12/6/89
R-55	Env. Chem Lab Gross Alpha Counting	C.N. Christy	11/29/89
R-56	Env. Chem Lab Electrodeposition of ²³⁸ Pu, ²³⁹ Pu, & ²⁴² Pu Tracer	C.N. Christy	1/21/89
R-57	Env. Chem Lab Plutonium in Air Filters-EML, On & Offsite Env. Filters	C.N. Christy	9/5/89
R-58	Env. Chem Lab Amion Exchange in Plutonium Analysis	C.N. Christy	10/4/89
R-59	Env. Chem Lab Acid Dissolution of Plutonium Soil Samples	C.N. Christy	10/4/89
R-60	Env. Chem Lab ²³⁸ Pu and ²³⁴ Pu in Vegetation & Oils	C.N. Christy	1/24/89

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
SS-01	Pinellas Plant Site Env. Rept. for Calendar Year 1988	U.S. DOE, PAO	6/1/89
SS-02	Rept. of the Investigation of No. 2 Diesel Fuel Oil Leak	GEND Investigation Report	3/31/83
SS-03	Guidelines for Assessment & Remediation of Petro. Contam. Soils	Florida DER Office of Tech. Support	1/89
SS-04	Environmental Assessment Pinellas Plant Site	U.S. DOE	7/83
SS-05	Contamination Assessment Report-NE Groundwater Investigation	CH ² MHill	2/89
SS-06	Env. Survey Preliminary Report	U.S. DOE, Office of Env. Audit	11/87
SS-07	Reconnaissance of Water Quality at a US DOE Site Pinellas Co. FL	USGS WR1 Report 85-4062	1985
SS-08	Hazardous Waste Operating Permit (Draft)	FDER	12/7/89
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Document Number	Title/Description	Author/Organization/Recipient	Document Date
SW-01	4.5 Acre Site (August 1988)	CH ² M Hill (FCR26042.C1)	8/88
SW-02	4.5 Acre Site Technology Assessment	CH ² M Hill (FCR27721.A1)	7/89
SW-03	NPDES Discharge Monitoring Reports	J.W. Schumacher-GEND	1982
SW-04	NPDES Discharge Monitoring Reports	DOE/PAO	1978-79
SW-05	NPDES Discharge Monitoring Reports	DOE/PAO	1977
SW-06	Draft NPDES Permit	DOE/PAO	various
SW-07	Drains	GEND	1986-87
SW-08	Drums	GEND	1983-87
SW-09	Environmental Compliances	DOE/PAO	1985-89
SW-10	Environmental Issues	JR Vipond	7/6/89
SW-11	Environmental Monitoring	DOE/PAO & GEND	1987-89
SW-12	Summary of Annual Site Environmental Monitoring Reports	DOE/EP-0049/1	1-12, 1983
SW-13	Environmental Monitoring Reports	DOE/PAO	1981-86
SW-14	Interagency Mfg. Oper. Grp. Subgroup on Environ. Testing Mtg. #44	Sandia National Laboratory	3/88
SW-15	Environmental Monitoring Procedures	DOE/PAO	1986

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
SW-16	Flood Hazards	DOE/PAO	1984-88
SW-17	Map-Building 600	DOE/PAO	1980
SW-18	Historical Dates for Wastewater Treatment & Flow (Discharge) Direction Changes	Unknown	1957-83
SW-19	January 1990 Discharge to POTW	Pinellas County Sewer System	1/90
SW-20	EPJA & State Identification of Impaired Waters Pursuant to Section 304(1)-		
	Water Quality Act of 1987	DOE/PAO	9/8/89
SW-21	"Notice of Decision" State's Clean Water Act	BR Barrett-EPA	6/2/89
SW-22	NPDES Stormwater Permits	GEND & DOE/PAO	1983-89
SW-23	Permit Information Manual-Management & Storage of Surface Waters	Southwest FL Water Mgmt. District	1987
SW-24	Discharge Reports to POTW	Pinellas County Sewer System	8/89
SW-25	Wastewater Discharge Reports	GEND	1983-89
SW-26	Radioactivity Discharges Historical Data	GEND	various
SW-27	Archaeological Significance Program	DOE/PAO	2/89
SW-28	Ground Water Monitoring Program	DOE/PAO	1981-87
SW-29	Ground Water Recovery System	GEND	1988

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
SW-30	Metal Finishing Category-Compliance Status Report	CD Richardson-GEND	1986
SW-31	Permits for Work & Structures in, and for Discharges or Deposits into		
	Navigatable Waters	Department of the Army	1971
SW-32	Operating Permits-Hazardous Waste Storage and Treatment Facility	Dept. of Environ. Reg. & DOE/PAO	1986-88
SW-33	Sewer System Sampling Results & Monitoring Program	DOE/PAO	1987-89
SW-34	Results of the Analysis of the Vapor Blast Sludge at the Pinellas Plant	FE Davis-DOE/PAO	2/88
SW-35	ES&H Strategic Plan	HF Gregory-DOE/PAO	1/89
SW-36	Tritium Operations	GEND	1982-89
SW-37	USGS Quarterly Update Report	HF Gregory-DOE/PAO	11/88
SW-38	Wastewater Discharge Reports	JR Majestic-GEND	1989
SW-39	Water Quality	US Dept. of the Interior & GEND	1981-87
SW-40	Baseline Monitoring Reports	RD Klein	1987-89
SW-41	POTW Reporting	D Palmer	1/90
SW-42	POTW Sample Log	Unknown	11/89
SW-43	Investigation Report of Non-Compliant Wastewater Release	EA Summerford	1/8/90

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Document Number	Title/Description	Author/Organization/Recipient	Document Date
SW-44	UOR #NDD 90-002	CK Hall, et al	1/17/90
SW-45	"Corrective Action Description: Note 4", DOE	Unknown	
SW-46	CHM8430, POTW Chromium Determination	Palmer-NDD-Chemistry Laboratory	11/14/89
SW-47	Standard #5.12.-Operating Instructions for East, West & South Ponds	Unknown	10/30/89
SW-48	Qualified Environmental Sample Collection	J.R. Majestic	1/3/89
SW-49	Facility Engineering Mgmt.-personal interview concerning HP Lift Station	1/22/90	1/22/90
SW-50	Conceptual Design Report to Upgrade the Existing Drain Systems	EMC Engineers Inc.	6/89
SW-51	Standard #512	GEND, EH & SP	5/89
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Document Number	Title/Description	Author/Organization/Recipient	Document Date
TL-1	SEN-7 Reports	PAO	9-12/89
TL-2	PAO Organizational Chart	PAO	12/89
TL-3	ES & H Surveys Schedule	PAO	11/9/89
TL-4	Secretary of Energy Notice, SEN-7-89	R. Hymer/Albuq. Oper. Office, PAOD/EE Patenaude	6/12/89
TL-5	Clarification on SEN-7-89	R. Hymer/AL PAOD/EE Patenaude	9/12/89
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Document Number	Title/Description	Author/Organization/Recipient	Document Date
WM-01	Pinellas Plant's Mo. Environmental Compliance Report-12/1-31,1989	PAO	12/1-31/89
WM-02	Pinellas Plant's Mo. Environmental Compliance Report 11/1-30, 1989	PAO	11/1-30/89
WM-03	Pinellas Plant's Mo. Environmental Compliance Report-10/1-31, 1989	PAO	10/1-31/89
WM-04	Pinellas Plant's Mo. Environmental Compliance Report-9/1-30, 1989	PAO	9/1-30/89
WM-05	GENDD Environmental Health & Safety Manual	GEND	10/30/89
WM-06	Permit-Operation of a Hazardous Waste Storage & Treatment Fac.	FDER	8/16/88
WM-07	FDER Warning Notice-WH89-0017 HW525WD	FDER	7/24/89
WM-08	Operating Procedures-Hazardous Waste Management-G.1.20	PAO	
WM-09	Environmental Survey Findings Revised Implementation Plan	PAO	1/143/88
WM-10	Pinellas Plant Site Environmental Report for Calendar Year 1988-	GEND	6/1/89
	Environmental Health & Safety Program		
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APPENDIX D

Glossary of Abbreviations and Acronyms

ADM	Action Description Memoranda
AL	Albuquerque Operations Office
ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
ARAR	Applicable or Relevant and Appropriate Requirements
ASME	American Society of Mechanical Engineers
BMP	Best Management Practice
BMR	Baseline Monitoring Reports
CEARP	Comprehensive Environmental Assessment and Response Program
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
CHM	Chemistry Laboratory Method
CUP	Consumption User Permit
CWA	Clean Water Act
DER	Department of Environmental Regulations
DOE	Department of Energy
DOP	Diocetylphthalate
DOT	Department of Transportation
EA	Environmental Assessment
ECL	Environmental Chemistry Laboratory
EH&S	Environmental Health, and Safety
EH&SP	Environmental Health & Safety Program

Appendix D (Continued)

EIS	Environmental Impact Statement
EM	Environmental Monitoring
EOC	Emergency Operation Center
EP	Extraction Procedure
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ER	Environmental Restoration
ERDA	Energy Research and Development Agency
ES&H	Environment, Safety and Health
F.A.C.	Florida Administrative Code
FAWPCA	Florida Air and Water Pollution Control Act
FDER	Florida Department of Environmental Regulation
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FONSI	Finding of No Significant Impact
GEND	General Electric Neutron Devices
GOP	General Operating Procedure
GPP	General Plant Projects
GPR	General Purchase Requirement
HAZWRAP	Hazardous Waste Remedial Action Programs
HEPA	High Efficiency Particulate Air
HP	Health Physics
IWS	Inactive Waste Sites
LEPC	Local Emergency Planning Commissions
MEEI	Manufacturing Engineering Equipment Instruction
mg/L	Milligrams per liter
MI	Manufacturing Instruction

Appendix D (Continued)

MSDS	Material Safety Data Sheets
MTF	Memo-to-file
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NPL	National Priorities List
OI	Operating Instructions
OJT	On-the-Job Training
OSHA	Occupational Safety and Health Administration
PAO	Pinellas Area Office
PCAQD	Pinellas County Air Quality Division
pcb	Polychlorinated biphenyl
PCSS	Pinellas County Sewer System
PMI	Preventive Maintenance Instruction
POTW	Publicly Owned Treatment Works
ppb	Parts per billion
PT	Packaging and Transportation
Pu	Plutonium
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC&C	Quality Control and Consulting
QCR	Quality Control Rejects
QPP	Quality Program Plan
RCRA	Resource Conservation and Recovery Act
REAP	Reportable Excess Automated Property System
RI/FS	Remedial Investigation/Feasibility Study

Appendix D (Continued)

RSO	Responsible Supervisory Official
RTG	Radioisotopically Powered Thermoelectric Generator
SAR	Safety Analysis Report
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SEPC	State Emergency Planning Commissions
SHPO	State Historic Preservation Officer
S&OH	Safety and Occupational Health
SPCC	Spill Prevention Control and Countermeasures Plan
SRL	Site Rehabilitation Levels
SWFWMD	Southwest Florida Water Management District
SWMUs	Solid Waste Management Units
TSA	Technical Safety Appraisal
TSCA	Toxic Substances Control Act
ug/g	Micrograms per gram
UOR	Unusual Occurrence Report
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WM	Waste Management
WWNU	Wastewater Neutralization Unit

APPENDIX E

TABLE E-1 TIGER TEAM UPDATE OF ENVIRONMENTAL SURVEY FINDINGS

FINDINGS	PLANNED COMPLETION DATE	ACTUAL COMPLETION DATE	COST TO DATE	COST TO COMPLETE	TIGER CHECK ON CURRENT STATUS	PINELLAS RECOMMEND TO AL FOR CLOSEOUT
1. Air IV-1 Voc Inventory	3/31/88	3/31/88 ¹	Minimal	Minimal	T.T. FIND # A/CF-1	C
2. Air IV-2 Toxics Inventory	9/30/88	7/01/88 ²	Minimal	Minimal	T.T. FIND # A/BMPF-4	C
3. Surface Water II-1 Toxics to POTW	6/30/87	10/31/87	\$42,000	\$42,000	NON-ISSUE	C
4. Surface Water III-1 Southwest Pitch	11/01/91	-	Not determined	Not determined	NON-ISSUE ³	-
5. Surface Water III-2 Pond/ditch sediments	11/01/91	-	Not determined	Not determined	NON-ISSUE ⁴	-
6. Surface Water IV-1 Wastewater Neutralization Operation problems	3/31/88	3/31/88	Not determined	Not determined	T.T. FIND # SW/CF-2	C
7. Surface Water IV-2 Baseline Monitoring Report	10/31/87	10/31/87	\$2,000	\$2,000	NON-ISSUE	C
8. Surface Water IV-3 Sludge Build-up	1/11/88	1/11/88	\$11,000	\$11,000	NON-ISSUE	C
9. Surface Water IV-4 Inadequate SPCC	12/31/88	Ongoing	0	\$25,000	T.T. FIND # SW/BMPF-5	-

E-1



	COMPLETION DATE	COMPLETION DATE	TO DATE	TO COMPLETE	CHECK ON CURRENT STATUS	RECOMMEND TO AL FOR CLOSEOUT
10. Surface Water IV-5 Sump Infiltration	12/31/88	Ongoing	0	\$40,000	T.T. FIND # SW/BMPF-2	-
11. Surface Water IV-6 Vapor Blaster Discharge	12/31/88	Ongoing	\$20,000	Unknown	T.T. FIND # SW/CF-4	-
12. Groundwater II-1 Contaminated aquifer	FY-92 ⁵	Ongoing	\$1,850,000	\$9,500,000	T.T. FIND # GW/CF-1	-
13. Groundwater II-2 Hydrogeology Characterization	10/31/88	12/19/88 ⁶	\$45,000	\$45,000	T.T. FIND GW/BMPF-3	C
14. Groundwater III-1 Other groundwater contamination (potential)	FY-88	Ongoing	Not Determined	Not Determined	T.T. FIND # GW/CF-2	-
15. Groundwater IV-Potential Well Contamination	3/31/88	3/31/88	\$1,000	\$1,000	NON-ISSUE	C
16. Groundwater IV-2 Well Security	3/31/88	1/15/88	Minimal	Minimal	T.T. FIND #GW/BMPF-2	C
17. Groundwater IV-3 Well abandonment	9/30/87	9/30/87 ⁷	Minimal	Minimal	T.T. FIND # GW/CF-2	C
18. Waste Management II-1 Vapor Blaster Sludge	12/31/88	11/15/89	\$18,000	\$18,000	NON-ISSUE	-
19. Waste Management IV-1 Waste Blasting Materials	6/30/88	6/30/88	Minimal	Minimal	NON-ISSUE	-

		COMPLETION DATE	COMPLETION DATE	TO DATE	TO COMPLETE	CHECK ON CURRENT STATUS	RECOMMEND TO AL FOR CLOSEOUT
20.	Waste Mgmt IV-2 Solid Waste Segregation	9/30/88	9/30/87	Minimal	Minimal	T.T. FIND # WM/BMPF-1	C
21.	TSCA IV-1 Active PCB Transformers	4/30/88	4/30/88	\$4,400,000	\$4,400,000	NON-ISSUE	C
22.	TSCA IV-2 Chem Stg.	3/31/88	12/15/87	Minimal	Minimal	T.T. FIND # TSCA/CF-3	C
23.	TSCA IV-3 Chem Stg.	9/30/87	6/30/87 (Ongoing)	Minimal	Minimal	NON-ISSUE	C
24.	TSCA IV-4 Improper Chemical Handling	9/30/87	6/30/87 (Ongoing)	Minimal	Minimal	NON-ISSUE	C
25.	TSCA IV-5 Incomplete labeling	9/30/88	9/30/87	Minimal	Minimal	NON-ISSUE	C
26.	Radiation IV-1 Tritium Monitoring	6/30/88	3/30/89	\$79,000	\$79,000	NON-ISSUE ⁸	C
27.	Radiation IV-2 Monitor Calibration	12/31/87	12/31/87	Minimal	Minimal	T.T. FIND # A/CF-3	C
28.	Radiation IV-3 Stack Monitoring Equipment	6/30/88	6/30/88	Minimal	Minimal	NON-ISSUE	C
29.	Radiation IV-4 Tritium Releases	6/30/88	9/22/89	\$1,108,000	\$1,108,000	NON-ISSUE	C
30.	QA IV-1 Sampling Procedures	12/30/87	12/15/87	Minimal	Minimal	T.T. FIND # ⁹ QA/CF-2	C

	COMPLETION DATE	COMPLETION DATE	TO DATE	TO COMPLETE	CHECK ON CURRENT STATUS	RECOMMEND TO AL FOR CLOSEOUT
31. QA IV-2 Analytical Procedures	12/15/87	12/15/87	Minimal	Minimal	T.T. FIND # ¹⁰ QA/CF-1	C
32. QA IV-3 Chain of custody is lacking	10/31/87	10/31/87	Minimal	Minimal	T.T. FINDING # ¹¹ QA/CF- 2	C
33. QA IV-4 Training not documented	9/30/87	9/30/87	Minimal	Minimal	NON-ISSUE	C
34. Inactive Sites III-1 CEARP Sites	11/01/91 ¹²	Ongoing	0	Unknown	T.T. FIND # IWS/CF-1	-
35. Inactive Sites III-2 Non-CEARP Sites	2/01/89	2/01/89	0	0	NON-ISSUE	C
36. Inactive Sites IV-1 DOE Order 5480.14	12/15/87	12/15/87	0	0	NON-ISSUE	C

NOTES

1. The date given in the Pinellas Action Plan is the date for initiating the stack study. This is misleading. In reality, no progress has been made.
2. The Action Plan states that a methodology for calculating toxic emission rates has been completed. The Tiger Team found no evidence of this. No Toxics Inventory currently exists.
3. This is now a Solid Waste Management Unit in the RCRA Permit. Reconnaissance sampling showed some hits.
4. These are now Solid Waste Management Units in the RCRA Permit.
5. The Action Plan identified three inactive waste sites as potential sources. The date given is the last date for closure of all remedial actions. In reality, most of the interim dates for studies of remedial actions at these sites have slipped extensively. The new completion date is January 15, 1997.
6. The planned action is complete. However, the Tiger Team identified more work to be done.
7. The action consisted only of analyzing the State Regulations. The site missed an applicable regulation. See referenced Finding.
8. The monitoring system has been installed. However, the Finding deals with problems in operating the system.
9. The procedures were developed as called for by the Action. However, the procedures are inadequate and inconsistent. See referenced Finding.
10. The procedures have been developed. However, the site has not been auditing their implementation.
11. The procedure has been developed. However, it is not being followed.
12. The dates for ER site closures have slipped extensively.

United States Government

Department of Energy

Pinellas Area Office

memorandum

DATE: January 17, 1990

REPLY TO
ATTN OF:

W. W. Bixby, FTS 848-6711



SUBJECT:

Weekly Status Report for Pinellas Tiger Team
Assessment - Week of January 15, 1990 to January 19, 1990

TO:

Lawrence A. Weiner
Acting Director
Office of Special Projects (EH-24)

● **SIGNIFICANT TEAM ACTIVITIES AND ACCOMPLISHMENTS**

- The pre-assessment site visit was conducted on January 3-4, 1990. The TSA, Environmental and Management Team Leaders plus the Management Team, were in attendance.
- The Management Team Leader met with representatives of the Operational Surety and Weapons Program Divisions of the Albuquerque Operations Office on January 9, 1990.
- Representatives of the Management Team interviewed Mr. Art Glenn, GE Vice President for Communications and Strategic Systems Division, on January 11, 1990. Mr. Glenn is the Manager responsible for the Pinellas Plant at GE Corporate Headquarters.
- Tiger Team arrived on site January 15, 1990, met with contractor counterparts, and initiated field activities on January 16, 1990.

● **SIGNIFICANT FINDINGS**

- The Albuquerque interviews and the Pinellas in-briefing highlighted the Operational Surety Division role in instilling ES&H accountability in the line function within ALO and Pinellas Area Office. This office is located in the line organization and is intended to ensure emphasis is placed on safety, health and environmental protection.
- Observations from the GE Corporate interview included:

GE'S clear understanding of the issues and problems at Pinellas and a concern about future risks versus rewards at the Pinellas Plant.

GE has little direct oversight at Pinellas. However, the GE culture at Pinellas is maintained through rotation of managers with other GE Facilities.

- A 66 year-old subcontract employee of GE passed away at 4:00 PM on Monday, January 15, 1990, while installing electrical cable. While the autopsy indicated the individual died of natural causes which were non-work related, the TSA will review the response by GE and the Pinellas Area Office in responding to the situation.
- **ISSUES/PROBLEMS ENCOUNTERED OR ANTICIPATED**
 - None.
- **FUTURE ACTIVITIES**
 - A meeting is scheduled for 1:00 PM on Monday, January 22, 1990, with representatives of the local office of the Florida Department of Environmental Regulation (FDER). The purpose is to brief them on the scope of the Tiger Team and to solicit their involvement in the review. Representatives from FDER Headquarters in Tallahassee were briefed by the Tiger Team during the pre-assessment visit. EPA Region 4 was contacted but did not attend either the pre-assessment visit or the in-briefing.
- **STATUS OF REPORT AND ACTION PLAN**
 - The Medical Protocol close-out is scheduled for Friday, January 19, 1990, at 12:30 PM.
 - A draft report for a "Reality" check with the site is scheduled to be available on January 29, 1990.
 - The TSA closeout is scheduled for January 31, 1990, at 9:00 AM.
 - The Tiger Team closeout is scheduled for February 2, 1990, at 9:00 AM.

cc: E. Patenaude - DOE

United States Government

Department of Energy

Pinellas Area Office

memorandum

DATE: January 24, 1990

REPLY TO
ATTN OF: W. W. Bixby, FTS 848-6711

SUBJECT: Weekly Status Report for Pinellas Tiger Team
Assessment - Week of January 22, 1990 to January 26, 1990

TO: Lawrence A. Weiner
Acting Director
Office of Special Projects (EH-24)

● SIGNIFICANT TEAM ACTIVITIES AND ACCOMPLISHMENTS

- Ms. Lynn Milanian of the local office of the Florida Department of Environmental Regulation was briefed by the Team Leader and the Environmental Team Leader on Monday, January 22, 1990, on the role of the Tiger Team and the key findings to date in the Environmental Area.
- The emergency exercise was conducted on Tuesday, January 23, 1990. The exercise included active participation by the Pinellas County Emergency Management Administration. The TSA and the Environmental Teams observed the exercise and will address their findings in the Tiger Team report.
- The field work by the TSA Team is essentially complete. The Environmental field work will be completed by January 26, 1990. The Management Team has completed the majority of their interviews and document reviews.
- The plant is cooperating fully in the videotaping of Tiger Team activities for use in future Tiger Team training.

● SIGNIFICANT FINDINGS

- Existing resources and training programs in ES&H activities for DOE and contractor organizations need to be increased.
- DOE guidance, direction, and interpretation of ES&H policy to the contractor needs to be strengthened.
- The plant does not have operating air permits for its existing sources and has not identified which sources need permits. A complete inventory of drains does not exist.

- Findings related to NEPA include:
 - Lack of GE procedures to conduct NEPA assessments;
 - Instances of construction proceeding without approved NEPA documentation;
 - Lack of a FONSI for the 1983 Environmental Assessment.
- A systematic site-wide Hazard Assessment Program does not exist.
- The safety review function required by DOE 5482.1B does not currently exist.
- The Partnership Day-Care School, which is scheduled to begin accepting students in March, does not have approved NEPA documentation or an approved safety analysis. The school is on the site located adjacent to the Pinellas Plant building.
- A lack of formality exists in training certification and operational compliance with procedures.
- The site has an excellent Medical Program which needs additional staff and space.
- A clear delineation of responsibilities for ES&H functions for both the DOE Area Office and the Contractor has not been established.
- **ISSUES/PROBLEMS ENCOUNTERED OR ANTICIPATED**
 - The requirement for a Consent Decree versus proceeding with the corrective action agreed to by the Florida State Department of Environmental Regulation (FDER) for the 4.5 acre site needs further evaluation by DOE. All necessary approvals have been received by the Area Office from the FDER to allow work to begin this Spring to pump and treat the liquid, thereby reducing the plume of contamination.
- **STATUS OF REPORT AND ACTION PLAN**
 - A draft report for a "Reality" check with the site is still scheduled for availability on January 29, 1990.
 - The TSA closeout is scheduled for January 31, 1990, at 9:00 AM.
 - The Tiger Team closeout is scheduled for February 2, 1990, at 9:00 AM.

cc: E. Patenaude - DOE

memorandum

DATE: January 31, 1990

REPLY TO: W. W. Bixby, FTS 848-6711 

ATTN OF:

SUBJECT: Weekly Status Report for Pinellas Tiger Team
Assessment - Week of January 29, 1990 to February 2, 1990

TO: Lawrence A. Weiner
Acting Director
Office of Special Projects (EH-24)

● **SIGNIFICANT TEAM ACTIVITIES AND ACCOMPLISHMENTS**

- All three Subteams completed their field work on January 26, 1989.
- A first draft of the TSA report was available on January 26, 1990. The TSA conducted their internal peer review on January 27, 1990.
- The first drafts of the Environmental and Management team reports were completed on January 29, 1990.
- The Environmental and TSA teams initiated factual accuracy reviews of their reports on January 29, 1990.

● **SIGNIFICANT FINDINGS**

- Copies of four Category II findings and supporting concerns for Quality Verification, Technical Support, Occupational Safety and Fire Protection were provided to and discussed with senior GEND and Pinellas Area Office representatives on January 29, 1990. A summary of the findings is attached. Most of the issues were already being addressed by the GEND staff prior to the meeting.
- Both DOE and GEND are undergoing a significant ES&H cultural change. Senior management, mid management and floor personnel are beginning to accept ES&H as a line-program responsibility. Implementation of this responsibility is just beginning.
- One organizational unit at the Pinellas Plant has been adding small amounts of non-radioactive classified waste to radioactive waste to create "Classified Radioactive Waste" which is then suitable for disposal at Savannah River. This finding is consistent with similar findings at Kansas City and Pantex.

- There is a lack of adequate characterization of inactive waste sites. At least two of these sites have groundwater contamination in excess of State standards.
- The Plant has not fully determined which discharge points will require air permits.
- The Plant has not fully documented their radioactive dose assessments.
- **ISSUES/PROBLEMS ENCOUNTERED OR ANTICIPATED**
 - None.
- **FUTURE ACTIVITIES**
 - The TSA closeout is scheduled for 9:00 AM January 31, 1990.
 - The Tiger Team closeout is scheduled for 9:00 AM February 2, 1990.
- **STATUS OF REPORT AND ACTION PLAN**
 - The draft TSA and Tiger Team Report will be left with the site on February 2, 1990.
 - Comments on the draft report are scheduled to be received on February 16, 1990.
 - Issue Final Tiger Team report on March 1, 1990.
 - Also, issue Draft Action Plan on March 1, 1990.

cc: E. Patenaude - DOE

CATEGORY II FINDINGS

QUALITY VERIFICATION

In the weapons-related programs, provisions are established for receiving and pre-use inspections of purchased material items. A program has not been established for the Non-Weapons program area. Receiving inspections are made only for general conformance to purchase requirements. In the maintenance warehouse, control of spare parts is less formal and maintenance spare parts are not individually identified. The maintenance warehouse in the 100 Area contains used equipment and there are no requirements for components such as electric circuit breakers and other used parts to be tested or verified prior to use. Because not all critical systems (i.e., air handling, building exhaust, HEPA filters, etc.) are identified, the use of untested used parts in such systems cannot be assured. Used parts should be certified as functional. This concern was rated as a Category II. GEND has recognized the need to improve quality control in maintenance activities and has identified a Safety Assurance initiative.

TECHNICAL SUPPORT

Hazardous materials are shipped by three organizations: Shipping, Receiving and Traffic, and Waste Management. Hazardous materials are received by two organizations: Receiving and Traffic, and Shipping. Although there is some coordination among the various groups, there is no single point contact responsible for all shipments made by GEND.

Symptomatic of the decentralization are differences noted in the shipping papers prepared by the above mentioned organizations. Compliance with the Emergency Notification requirement of DOE 1540.1 varied from total non-compliance to providing telephone numbers that were not 24-hour telephone numbers. This resulted in a Category II concern.

OCCUPATIONAL SAFETY

Potentially serious safety hazards and code violations were noted during this appraisal that need immediate attention by GEND management. Violations identified include improper hoisting and rigging practices by subcontractors (e.g., standing directly under a suspended load); subcontractor employees working immediately next to the edge of the Bldg. 100 roof with no fall protection; a GEND employee operating a table saw with no blade guard or anti-kickback device; failure to properly maintain and test electrical safety gloves and mats. A Category II concern has been identified to address these violations. A number of the violations were corrected immediately.

FIRE PROTECTION

Most facilities and operations onsite provide an adequate level of life safety features. However, several violations of the Life Safety Code were noted during this appraisal and confirmed from a consultant review done in October 1989. These violations included: single exits from high-hazard areas and improper door latches in the tritium recovery area (Area 108). These have been identified as a Category II concern.